MONTHLY WEATHER REVIEW.

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BOARD OF EDITORS { Mr. Horace E. Smith, Chief Clerk Weather Bureau, Professors Henry A. Hazen, Thomas Russell, and Charles F. Marvin, and Mr. Edward B. Garriott, in charge of Review Room.

INTRODUCTION.

This REVIEW is based on reports for November, 1891, from 2,630 regular and voluntary observers. These reports are classified as follows: 159 reports from Weather Bureau stations; 118 reports from United States Army post surgeons; 1,684 monthly reports from state weather service and voluntary observers; 34 reports from Canadian stations; 214 reports through the Central Pacific Railway Company; 421 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service;" monthly reports from local weather services established in all states and territories, except Idaho, and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR NOVEMBER, 1891.

The month was warmer than usual west of the Rocky Mountains and over the extreme northeastern part of the country, and was colder than the average November in the central valleys and along the Atlantic coast south of the 43d parallel. Over the west part of the middle plateau region and in Oregon the mean temperature was more than 4° above the normal, and in the upper Mississippi and middle Missouri valleys the deficiency exceeded 6°. At a number of stations in the plateau region and on the Pacific coast the month was the warmest November on record. The highest temperature ever reported for November was noted generally from the eastern slope of the Rocky Mountains to the Pacific coast during the first decade of the month. A well-defined cold wave advanced from the Pacific to the Atlantic coasts from the 16th to 18th, with heavy frost to the middle and east Gulf coasts and northern Florida, and a cold wave, which was attended at several stations by the lowest temperature on record for November, extended from Manitoba to the Atlantic coast from the 28th to 30th.

PRECIPITATION.

The monthly precipitation was in excess of the November average from the central lake region to the middle Gulf coast, and from the Red River of the North Valley to the north Pacific coast. In the Atlantic coast states, and over the southwestern and middle-western districts the monthly precipitation was deficient. The greatest excess occurred on the north Pacific coast, where it varied from 5 to 10 inches, and the most marked deficiency was noted over eastern Nova Scotia, where it exceeded 4 inches. At stations on the north Pacific coast, in the upper Missouri valley, from the central lake region over the upper Ohio valley, and in northern Arkansas and western Florida the monthly precipitation was the greatest, and at points west of the lower Missouri and lower Mississippi valleys it was the least ever noted for November. The monthly snowfall exceeded 60 inches at Climax, Colo.; 30 inches in extreme northern upper Michigan; 20 inches in northeastern southern Idaho and northern Wyoming; and 10 inches in northern New York, the interior of Virginia and North Carolina, northern Indiana, western and southern lower Michigan, and in parts of the Dakotas and western Minnesota. At the close of the month snow was reported on the ground in the interior of the Atlantic coast states from South Carolina northward, in the Lake region and the north part of the Ohio valley, and from the east part of the middle plateau region to the upper Mississippi and Red River of the North valleys.

STORMS.

Heavy wind and rain storms prevailed on the north Pacific coast during the first decade of the month. Heavy gales, with snow, occurred from Nebraska and the Dakotas over the Lake region on the 11th; heavy gales over the Lake region on the 16th and 17th; over the middle Atlantic and New England states on the 17th; over Lake Huron and Saginaw Bay on the 19th; over the Lakes on the 21st; and in the east Gulf states on the 22d. Storms of exceptional severity occurred over the middle Atlantic states and lower lake region on the 23d, resulting in loss of life and property. On the 26th heavy gales were reported over Lake Huron and Saginaw Bay; and on the 29th high winds prevailed along the Virginia and North Carolina coasts.

INLAND NAVIGATION.

By the close of the month the rivers in the northern tier of states were generally frozen over, and navigation was closed for the season. Navigation was reported closed for the season in the canals of New York, except the Erie, on the 30th.

DROUGHT.

Drought continued during the month in western Texas, Arizona, southern Kansas, and western Missouri. The drought in parts of New England and eastern New York, and in sections of the south Atlantic and Gulf states, Tennessee, Indian Territory, and the lower Ohio valley was broken during the first and second decades of the month.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for November, 1891, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars.

In November the mean pressure is usually highest over the middle plateau region, where it rises above 30.20; it is above 30.15 over the interior of the middle and east Gulf and south Atlantic states. The normal pressure for November is lowest over the Gulf of Saint Lawrence and Newfoundland, where it falls below 30.00. There is usually an increase of pressure over the United States and Canada, except from the lower lake region over the Canadian Maritime Provinces; there is also an increase of pressure over the north Atlantic Ocean south of the 40th parallel and west of the 40th meridian. Over the central part of the middle plateau region the normal pressure for November is more than .10 higher than for October, and from the lower lake region over Newfoundland the decrease exceeds .05.

In November, 1891, the mean pressure was above 30.20 over the Carolinas and Virginia, and in an area extending from Oregon over the middle plateau region the mean values were above 30.15. The mean pressure was lowest over Canada and the British Northwest Territory, where it was below 30.00.

A comparison of the pressure chart for November, 1891, with that of the preceding month shows an increase of mean pressure over the Atlantic coast states, the Dakotas and Minnesota, the Pacific coast states and the west part of the plateau region; elsewhere there was a decrease of pressure. The most marked increase of pressure occurred along the immediate Atlantic coast north of the 35th parallel, and over the central valleys of California, where it was .10, or more, and the greatest decrease was noted over the north-central part of the Lake region, and in an area extending from Missouri to central Texas, where it exceeded .05.

The mean pressure was above the normal east of the Mississippi River, along the Pacific coast, and over western Nevada. From the Rio Grande Valley and Arizona northward to the British Possessions, and over the north part of the Lake region, the mean pressure was below the normal. The greatest departure above the normal occurred along the New England and Nova Scotia coasts, where it exceeded .10, and the most marked departure below the normal was noted from New Mexico to Montana, and in Manitoba, where it varied from .05 to .10.

HIGH AND LOW AREAS.

The paths of well-defined areas of high and low pressure for November, 1891, are shown on Charts IV and I, respectively, and some of the more prominent features of the areas are noted in the table at the end of this chapter.

HIGH AREAS.

Eight high areas appeared, the average number traced for November during the last 16 years being 7. Four of the high areas apparently advanced from the Pacific Ocean, and 2 from the British Northwest Territory; one appeared over the middle plateau region, and one was a continuation of high area X for October, 1891. Two of the Pacific high areas, V and VI, traversed the continent, the average rate of progress being 24 and 27 miles per hour, respectively, and 2 disappeared by a decrease of pressure, one over the southern plateau, and the other over the middle Missouri valley. One of the high areas from the British Northwest Territory reached the Gulf of Saint Lawrence, and the other disappeared by a decrease of pressure over the middle and south Atlantic states. The high area which appeared over the middle plateau disappeared by a decrease of pressure over the southern plateau region, and the continuation of high area X for October, which was central over the north-central part of the country at the opening of the month, advanced to the Gulf of Saint Lawrence. The high areas followed a southeasterly course to the Mississippi River and passed thence east or north of east to the Atlantic coast, the average rate of advance, 24 miles per hour, being somewhat less than the average velocity of high areas for November. The following is a description of the high areas traced:

I.—Was a continuation of high area X traced for October, 1891, and at the opening of the month occupied the north-central part of the country, with pressure above 30.50 and freezing weather in an area extending from the Saskatchewan Valley over the middle Missouri valley. During the 2d and 3d this area moved over the south part of the Lake region, with a marked decrease of pressure on the latter-named date, and the morning of the 3d the temperature was below freezing in the middle and upper Ohio valleys, West Virginia, and central and western Virginia. During the 4th the center advanced to the Canadian Maritime Provinces, and the line of freezing weather extended to southern Pennsylvania.

II.—Appeared over the middle plateau region the evening of the 3d, with pressure above 30.20, and moving thence slowly southeastward disappeared by a decrease of pressure over the southern plateau region during the 5th, its passage being unattended by noteworthy features.

III.—Apparently advanced from the British Northwest Territory, and the morning of the 4th was central over Assiniboia, whence it moved to Minnesota by the morning of the 5th, and passed thence rapidly eastward to the Gulf of Saint Lawrence by the evening of the 6th, its rate of advance, 34 miles per hour, being the most rapid noted in connection with the high areas of the month. The influence of this area was small; the highest pressure noted attending its passage was 30.30, at Rockliffe, Ont., the morning of the 6th; and the line of freezing weather extended over Minnesota and the east part of the Dakotas on the 5th, and over western New York and the greater part of New England on the 6th. On the 7th this high area was central over the Gulf of Saint Lawrence and a ridge of high pressure extended thence to the Carolinas, where a second center of high pressure appeared; a cyclonic area of considerable strength was central off the middle Atlantic coast; and strong northerly winds prevailed along the New England and middle Atlantic coasts. Attending these conditions there was an abnormal fall in temperature of 5° to 11° in 12 hours over the south Atlantic states, and the first heavy frost of the season was noted at points on the southern coast of North Carolina.

IV.—Advanced from the Pacific Ocean and the evening of the 7th was central over Oregon, whence it moved slowly southeastward and disappeared by a decrease of pressure over the southern plateau region during the 9th. The pressure rose to 30.50 over the middle plateau region on the 8th, after which there was a marked decrease of pressure. On the 9th the first heavy frost of the season was noted at points in southeastern Arizona and extreme western Texas, and on the 10th at stations in eastern Texas south of the 30th parallel, and in Oklahoma Territory.

V.—Appeared off the Oregon and northern California coasts on the 9th, moved thence to the British Northwest Territory by the night of the 10th, thence to the upper Mississippi valley by the 13th, and thence to the New England coast by the night of the 15th. During the night of the 9–10th the abnormal rise in pressure in 12 hours was .80 inch over Alberta, and the pressure rose above 30.60 over Alberta by the evening of the 10th, with an abnormal temperature fall of more than 30° in Montana, and snow at points in western Montana and the British Northwest Territory. On the 11th the temperature was below zero in Alberta and the line of freezing weather extended over Colorado and Kansas. On the 12th a ridge of high pressure extended from the British Northwest Territory to Texas, the minimum temperature was below zero in central Montana, the line of freezing weather extended to Oklahoma Territory, and the first heavy frost of the season was noted at stations in central and eastern Texas. The morning of the 13th an elongated area of high pressure extended from the lower Ohio valley northwestward to the British Possessions, with central pressure ranging from 30.40 to 30.50, freezing weather occurred in the west part of the Lake region, the lower Ohio and upper Mississippi valleys, and heavy frost in the interior of the Gulf States and Georgia. On the 14th there was a slight increase in pressure, and the line of freezing weather extended to Virginia. On the morning of the 15th this area was central in the Saint Lawrence Valley,

where the pressure rose to 30.70 at Montreal, Quebec, in the morning, whence it moved eastward and was located off the Nova Scotia coast the morning of the 16th, with pressure above 30.70.

VI.—This high area was attended by a well-marked cold wave from the Pacific to the Atlantic coasts, and throughout the greater part of its course was attended by the lowest temperature of the month. It first appeared on the north Pacific coast on the 14th, with pressure above 30.30 in northwest Washington, freezing weather in the plateau region to northern New Mexico, the lowest temperature of the month at Fresno City, Cal., and Fort Canby, Wash., and the first heavy frost of the season at Port Angeles, Wash., and at points in northern California. On the 15th the pressure rose above 30.50 in Alberta, the line of freezing weather extended from the Lake region to northern New Mexico, the minimum temperature fell to zero at Lander, Wyo., the temperature was the lowest noted for the month in the west part of the middle and southern plateau regions, and the first heavy frost of the season occurred at points in the Sacramento Valley, California. During the 16th the center of this high area moved southeastward along the eastern slope of the Rocky Mountains, with pressure above 30.70, and a very marked barometric gradient to the eastward. The minimum temperature was below zero in Montana, Wyoming, and North Dakota, and a reading of —15° was recorded at Lander, Wyo. Over the greater part of the middle and northern plateau regions, on the north Pacific coast, and over the northeast slope of the Rocky Mountains the temperature was the lowest noted for the month, and the first heavy frost of the season was reported in western Oregon, southwestern Washington, and at points in southeastern Arizona. Continuing a southeasterly course the area reached the middle Mississippi valley the morning of the 18th. On the 17th the pressure rose to 30.80 in Kansas, the minimum temperature was below zero in Nebraska, a reading of —18° being reported at Valentine, freezing weather extended over the west Gulf states nearly to the coast line, the lowest temperature of the month was reported generally from the Dakotas to Texas, and the first heavy frost of the season was reported at Palestine, Tex. During the 18th the center passed eastward to West Virginia, with pressure ranging from 30.70 to 30.80, freezing weather occurred over the Gulf and south Atlantic states, the lowest temperature of the month at points from the Ohio Valley to the north part of the east Gulf states, and the first heavy frost of the season at stations on the immediate east Gulf and south Atlantic coasts and in northern Florida. During the 19th the high area passed off the middle Atlantic coast, with a slight increase of pressure.

VII.—Apparently advanced from the Pacific Ocean, and the morning of the 21st was central over Alberta, with pressure above 30.40. On this date the greatest abnormal rise in pressure in 12 hours noted for the month, .88, occurred at Medicine Hat, Assiniboia; and at Pueblo, Colo., there was an abnormal fall in temperature of 36° in 12 hours. Moving southeastward this high area disappeared by a decrease of pressure over the middle Missouri valley the night of the 22d.

VIII.—This high area was attended by a well-defined and unusually severe cold wave, and the lowest temperature of the month generally east of the 95th meridian, and in the middle Missouri and Red River of the North valleys. This cold wave advanced from Minnesota to the Atlantic coast from the 28th to the 30th. The high area apparently advanced from the British Northwest Territory, and the evening of the 27th was central over North Dakota, with pressure above 30.30, and temperature below zero southward to eastern South Dakota. By the morning of the 28th the center of the area had shifted slightly southeastward, the pressure had risen above 30.50, the minimum temperature fell below zero over Iowa, and was below —20° in the Valley of the Red River of the North, the line of freezing weather extended over the Ohio Valley, and the lowest temperature of the month was noted in the middle Missouri and Red River of the North valleys. The morning of the 29th an elongated area of high pressure extended from Wisconsin to Texas, with pressure above 30.60, the minimum temperature fell to zero along the Mississippi River as far south as Keokuk, Iowa, the line of freezing weather extended over the interior of the Gulf and south Atlantic states, the lowest temperature of the month occurred in the middle and upper Mississippi valleys, and the lowest temperature ever reported for November was noted at Des Moines, Iowa. During the 30th the high area contracted and there was a decrease of about .10 in central pressure. The center moved eastward over Tennessee, and was central over extreme western Virginia at the time of the last report of the month. On this date the line of freezing weather extended to the immediate east Gulf and south Atlantic coasts, the lowest temperature of the month was noted generally along the east Gulf and Atlantic coasts, the lowest temperature ever reported for November was recorded at Vicksburg, Miss., New Orleans, La., and Hatteras, N. C., and the first heavy frost of the season occurred at New Orleans, La., and Charleston, S. C.

LOW AREAS.

The principal track of November low areas over the North American continent lies between the 45th and 50th parallels, somewhat to the southward of the principal track for October; less frequented tracks are traced from the British Northwest Territory, the middle plateau region, and Texas, and unite with the main track over eastern Ontario; and well-defined storms, averaging about two per year, advance northward from the vicinity of Bermuda. The region of greatest storm frequency in November embraces Canada east of the 80th meridian, where the average number of low areas exceeds 5. Individual low areas seldom traverse the continent in November, the average number traced from the Pacific to the Atlantic oceans for that month being 0.6. The average velocity of the low areas, which is about 25 miles per hour during the summer, increases to 31 miles per hour in November.

The tracks of 13 low areas are plotted on Chart I for November, 1891, the average number traced for the corresponding month of the last 16 years being 12. Of the low areas traced for the current month 5 advanced from the north Pacific Ocean, one of which reached the Atlantic coast; 4 first appeared in the British Northwest Territory; 5 apparently originated on the southeast slope of the Rocky Mountains, two of which were subsidiary developments; and one was a continuation of low area X for October, 1891. The tracks of the low areas converged toward the Great Lakes and the Saint Lawrence Valley, and the average rate of progress, 31 miles per hour, was the same as the average velocity of November low areas of preceding years. Low area X, which advanced from Indian Territory to the lower Saint Lawrence valley from the 21st to 24th, was notably severe, and a description of its more prominent features is given herein. Low areas off the Atlantic coast caused high winds from New England to the Carolinas during the first decade of the month, and along the North Carolina coast during the 29th and 30th. The following is a description of the low areas which appeared over the United States and Canada:

I.—Was a continuation of low area X for October, and passed eastward from the lower Saint Lawrence valley to the Gulf of Saint Lawrence on the 1st, with pressure below 29.40, winds of 30 miles per hour and upwards from the Lake region to the New England and Nova Scotia coasts, and rain changing to snow in the lower Saint Lawrence valley. On this date the highest temperature of the month was noted generally in the south Atlantic states.

II.—The approach of this low area was indicated by north Pacific coast reports of the 1st, and the morning of the 2d the center was located over or near Vancouver Island. At Tatoosh Island, Wash., the barometer fell to 29.32, with south winds and rain, and at Fort Canby, Wash., the wind reached a velocity of 61 miles per hour from the southeast. By the evening of the 2d the storm-center had advanced to Alberta, with a loss of energy. The rain area extended over the northern plateau

region, and the first snow of the season was reported at points in the Dakotas, and at Wichita, Kans. During the 3d the center of disturbance advanced to Manitoba, and thence to the Lake region during the 4th, where it dissipated, being bounded on the east by high area I, and on the west by high area III. On the 3d the first snow of the season was reported at points in Illinois, Indiana, Ohio, Kentucky, and at La Crosse, Wis., and on the 4th at Lansing, Mich., Sandusky, Ohio, and in western Pennsylvania and West Virginia.

III.—This low area followed closely after number II. Its presence off the north Pacific coast was indicated by reports of the 3d, and the morning of the 4th it was apparently central near the north part of Vancouver Island, whence it moved to Alberta by the evening of that date, with heavy rain on the north Pacific and north California coasts, and high southerly winds which reached 63 miles per hour at Fort Canby, Wash. During the 5th the center advanced to Manitoba. The morning of that date the pressure was below 29.50 in the Saskatchewan Valley, and the abnormal decrease of pressure in 12 hours was .42 at Prince Albert, N. W. T. Rain continued on the north Pacific coast, and wind velocities of 30 miles per hour and upward were noted in the Missouri and Red River of the North valleys. During the 6th the center moved slowly eastward over Manitoba, after which it apparently dissipated. The eastward advance of this low area, in conjunction with the influence of low area II by which it was immediately preceded, produced the highest temperatures of the month generally west of the Mississippi River, and at a number of stations in that region the maximum temperature was the highest ever reported for November.

IV and IV*a*.—Low area IV advanced from the north Pacific coast, and the evening of the 6th was central over Alberta, with central pressure below 29.50. On this date heavy rain fell on the north Pacific coast, and the wind reached a velocity of 54 miles per hour from the west at Fort Canby, Wash., and at Tatoosh Island, Wash., a thunderstorm, with heavy hail, occurred in the afternoon. During the 7th the center advanced to Manitoba, with a slight loss of energy by the evening of that date, and by the morning of the 8th it had united over Lake Michigan with IV*a*, which had advanced from the southwest. Low area IV*a* appeared central over Kansas the evening of the 6th, and passed thence to Lake Michigan by the 8th, with a moderate display of energy during the 7th, and after the union of the two areas the center moved northward and disappeared north of the Lake region. These two areas, with numbers II and III, contributed to produce the highest temperature of the month in the central valleys and the Lake region. No general rain attended low areas IV and IV*a* east of the Rocky Mountains, save in the upper lake region on the 7th and 8th. Thunderstorms were reported in northeastern Iowa on the 7th, and in northern Kentucky the early morning of the 8th.

V.—Appeared over central Texas the morning of the 8th, with pressure below 29.60, and heavy rain in eastern Texas, whence it moved to southern Arkansas by the evening of that date, with heavy rain in northern Louisiana and western Mississippi, and the first snow of the season in central New Mexico and western Texas. During the 9th the center passed to the lower Ohio valley, without an appreciable loss of energy; rain fell from the Lake region to the Gulf, the rainfall being heavy on the middle Gulf coast, and the wind reached a velocity of 48 miles per hour from the northwest at Corpus Christi, Tex. During the 10th the center of disturbance advanced to Michigan, with a marked increase of energy, a barometer reading of 29.32 and an abnormal decrease in pressure of .40 in 12 hours being noted at Alpena, Mich. The rain area extended to the Atlantic coast, and the wind exceeded 40 miles per hour over the west part of the lower lake region. By the morning of the 11th this low area had united with number VI, which had advanced from the Pacific coast. High temperature continued from the Lake region to Tennessee, attending the passage of this low area.

VI.—The presence of this low area on the Pacific coast north of the region of observation was shown by the evening reports of the 8th. On this date high southerly winds and heavy rain were reported in western Washington. By the morning of the 9th the center had advanced to Alberta, with pressure about 29.60, whence it moved to Assiniboia by the evening report, and to North Dakota by the 10th. On the latter-named date the central pressure fell below 29.50; the wind reached a velocity of 60 miles per hour from the northwest at Fort Assinaboine, Mont.; light rain fell in the Missouri Valley and snow over the middle plateau region and on the northeast slope of the Rocky Mountains. By the morning of the 11th the center had moved over the Lake region and united with low area V which had advanced from the southwest; the pressure had fallen below 29.30 over the north-central part of the Lake region; severe gales and heavy rain prevailed over the Lake region, and thence to the Missouri Valley; and the first snow of the season was noted at stations in the west part of the Lake region and in the upper Mississippi and middle Missouri valleys. On this date the rain area extended to the middle Atlantic and New England coasts. During the 12th the low area passed to the Gulf of Saint Lawrence with a marked decrease of energy. At points on the New England and middle Atlantic coasts the highest temperature of the month was reported from the 10th to 12th.

VII and VII*a*.—Low area VII apparently advanced from the British Northwest Territory, and the morning of the 15th was central over southern Manitoba as a slight depression. The evening report showed this low area central over upper Michigan, where it was joined by number VII*a* which had advanced from the southwest. On this date the abnormal decrease of pressure in 12 hours was .70 at Marquette, Mich.; the pressure fell below 29.70 at the center of the disturbance; fresh to strong gales prevailed over the Lake region; the rain area extended to western New York and western Pennsylvania; and snow fell over the northwest part of the Lake region and in the Red River of the North Valley. During the 16th the center moved slowly eastward north of the Lake region; the barometric gradient was marked to the eastward and westward; rain fell generally in the Atlantic coast states; and high winds continued over the Ohio Valley and the east part of the Lake region. By the evening of the 17th the center reached New Brunswick. On this date a marked increase of energy was shown; central pressure fell below 29.50; the wind reached a velocity of 54 miles per hour from the southwest at Buffalo, N. Y.; heavy wind and rain storms prevailed from the Lake region over New England; and the highest temperature of the month was reported at points in eastern New York and on the south New England coast. By the morning of the 18th the center had advanced over the Gulf of Saint Lawrence without an appreciable loss of energy. When this low area was central over Manitoba a trough of low pressure extended thence to Texas and two secondary low areas appeared, one over western Texas and the other, VII*a*, over eastern Kansas. The evening report of the 15th showed a low pressure trough from the west part of the Lake region to Texas, with one well-defined cyclonic center in upper Michigan.

VIII.—Appeared over Alberta the evening of the 17th, with central pressure about 29.80, an abnormal decrease in pressure of .54 in 12 hours being noted at Medicine Hat, N. W. T. On this date heavy rain fell on the north Pacific coast. During the 18th the center passed to Manitoba, with pressure below 29.60, and snow in the Saskatchewan Valley, and the night of the 19th it apparently disappeared by an increase of pressure north of the Lake region. On the latter-named date the first snow of the season was reported at Madison, Wis., and high southerly winds prevailed over the Lake region, a velocity of 51 miles per hour from the south being noted at Chicago, Ill.

IX.—Appeared over the British Northwest Territory on the 19th. The night of the 20th the center of disturbance moved over northeastern Montana, with pressure below 29.40, wind velocities exceeding 40 miles per hour from Washington over

Montana, and snow in the Saskatchewan Valley. During the 21st the low area advanced to the Lake Superior region, where it united with number IX*a* which had advanced from the southwest. The evening of this date a trough of low pressure extended from Lake Superior to Texas, with two cyclonic centers, one, number IX, over Lake Superior and the other, number X, over Indian Territory. Generally stormy weather prevailed east of the Rocky Mountains, high winds from the middle and northeast slopes of the Rocky Mountains eastward, and destructive gales over the Lake region. Low area IX*a* appeared near the Panhandle of Texas the morning of the 20th, whence it advanced northeastward and united with number IX by the evening of the 21st, its passage being attended by heavy rain in the central valleys during the 21st.

X.—Belongs to a type of winter storms which originate in the Southwest and move over the central valleys, gathering strength as they advance eastward. This low area was the first storm of this class of the season, and was notable chiefly on account of the rapid increase of energy during the 23d. For 24 hours preceding the appearance of this low area in the Southwest rain and strong southerly winds had been general throughout the central valleys and the Lake region. These conditions extended to the Atlantic coast during the 21st, and the birth of this storm in the southern part of a trough of low pressure which extended from the upper lake region to the Rio Grande Valley found the entire eastern country covered with a mass of warm, humid air walled in by high pressure to the eastward and westward. The barometric gradient was marked eastward to the Atlantic coast and westward to the plateau region, heavy rain fell in the central valleys and the Lake region, and the temperature was 10° to 20° above the normal from the Lake region and Saint Lawrence Valley to the middle and east Gulf coasts. West of the region of low pressure there was a decided fall in temperature, the abnormal change in 12 hours exceeding 30° in Colorado.

By the morning of the 22d the storm-center had moved east-northeast along the trough of low pressure which had shifted eastward, and occupied a circular area in the middle Mississippi valley bounded by the isobar of 29.70, and rain was falling generally east of the Rocky Mountains. By the evening of the 22d the center had changed its position but slightly, a marked decrease of pressure occurred, however, and the isobar of 29.60 included an area extending from Georgian Bay to the middle Mississippi valley. On this date the rainfall was excessive in the middle and east Gulf states and Tennessee, and the barometric gradient from the middle Mississippi valley to the middle Atlantic coast, a distance of about 900 miles, was .60 inch. Severe storms occurred in the Southern States; the temperature continued decidedly above the normal over the eastern part of the country; and there was a marked fall in temperature in the Southwest, the abnormal change in the 12 hours being more than 30° in Arkansas.

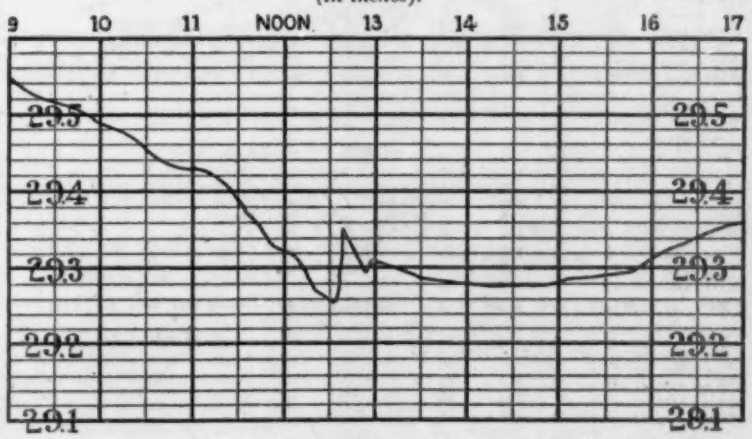
The general meteorological conditions at 8 a. m. and 8. p. m. (75th meridian time) of the 23d are shown on Chart VII. The morning of that date the center occupied central Ohio, with pressure 29.24 (reduced) at Cleveland and Columbus, Ohio; excessive rain fell in the Gulf States and Ohio Valley, and snow in Arkansas, Tennessee, and northern Mississippi. The line of freezing weather extended over Texas to the 30th parallel, and northward, west of the Mississippi River, to the west end of Lake Superior. The barometric gradient continued marked to the eastward and westward of the center. The evening report of the 23d locates the center near the west end of Lake Ontario, the lowest pressure, 28.86, being noted at Buffalo, N. Y. On this date there was a decrease of pressure of .38 at the storm-center and of .54 at Albany, N. Y., in 12 hours; high winds reaching 50 to 60 miles per hour, heavy rain, and storms of a local character occurred in the Atlantic coast states, the lower lake region, and the upper Ohio valley, causing considerable damage. At a number of points in the southeast quadrant of the cyclonic area the shift of wind from southeast to southwest was attended by heavy gusts or squalls of wind and rain, accompanied, in places, by thunder and lightning. In a number of instances the squalls advanced with a suddenness and velocity seldom witnessed in the middle-eastern states. Unfinished and insecure buildings were prostrated, causing some loss of life, and the aggregate loss was greatly swelled by damage of a minor character. During the night of the 23d–24th the center moved northeastward north of the Saint Lawrence River without an apparent loss of energy, and disappeared north of the Gulf of Saint Lawrence by the evening report of the 24th.

A resumé of the above description of this low area shows that its course and rate of advance were about normal; that a rapid increase of energy is not unusual in storms of the type to which it belongs; and that a general storm, the materials for which had been gathered prior to the development of this low area, extended over the region which it traversed. The trough of low pressure within which it originated presented in abundance the elements which contribute to a storm's growth and energy, and the increase in strength of the low area under consideration may be attributed to the favorable conditions which attended its origin, the elements of energy gathered and presented throughout its course, and the absence of areas of high pressure in the line of its direct and normal advance.

The severe wind and rain squalls which occurred over the Carolinas and the middle Atlantic states are given a description under the heading "Local storms." These storms, as stated above, occurred with the shift of wind from southeast to southwest, and generally marked the time of lowest pressure in the respective localities.

The following copy of a section of a barograph record presents the pressure curve at the Weather Bureau Office at Washington, D. C., from 9 hours to 17 hours of November 23, 1891. The barograph cylinder was about 4.9 minutes fast. Applying this correction, the true time of the upward turn was 12 hours, 28.7 minutes at its beginning, and 12 hours, 33.7 minutes at its maximum point. By another barograph these times are 12 hours, 30.4 minutes, and 12 hours, 35.1-5 minutes, respectively. It is thought that the latter figures are the more accurate, and the true time is assumed as 12 hours, 30 minutes, and 12 hours, 35 minutes, respectively.

Record of self-registering barometer, Washington, D. C., November 23, 1891 (in inches).



XI.—Appeared over the British Northwest Territory on the 24th, with pressure below 29.60, light rain on the north Pacific coast and over the northern plateau region, snow in the upper Missouri valley, and high winds on the northeast slope of the Rocky Mountains. During the 25th the center moved to Minnesota, with a slight increase in central pressure, a marked rise followed by a decided fall in temperature over North Dakota, and snow in the Lake region, the extreme upper Mississippi, and the Red River of the North valleys. On this date an ill-defined low area appeared over northern Texas, and a cyclonic disturbance was indicated over the eastern part of the Gulf of Mexico. On the 26th low area XI passed to Georgian Bay,

with pressure falling below 29.40, heavy gales over the Lake region, the wind reaching 50 miles per hour from the southwest at Chicago, Ill., rain in the southeastern and eastern states, and snow in the north and north-central districts. On this date fresh northerly winds and rain along the middle Atlantic and south New England coasts attended the presence of a low area off the Carolina coast. During the night of the 26–27th the center moved rapidly eastward and the morning of the 27th was central over eastern Maine, with central pressure below 29.30. On this date the greatest decrease in pressure in 12 hours noted for the month, .72, occurred at Eastport, Me.; snow fell in the northern part of the country east of the Rocky Mountains, rain in the middle and south Atlantic states, the Ohio and middle and lower Missouri valleys, and high winds prevailed from the eastern part of the Lake region to the New England coast. By the evening of the 27th the storm-center had disappeared over the Gulf of Saint Lawrence.

XII.—Advanced from the British Northwest Territory, and the morning of the 26th was central over Alberta, with pressure below 29.60. On this date the center advanced slowly southeastward, with a marked rise in temperature along the eastern slope of the Rocky Mountains, the abnormal rise in temperature in 12 hours being 24° at Pueblo, Colo., snow in the Missouri Valley, and high winds on the northeast slope of the Rocky Mountains. From this point the center of disturbance moved rapidly southeastward to the lower Missouri valley by the morning of the 27th, and thence north of east to Maine by the morning of the 28th, its average rate of advance, 54 miles per hour, being the greatest noted in connection with the low areas of the month. Slight changes occurred in central pressure during the passage of the low area. On the 27th the isobar of 29.70 inclosed an elongated area extending from the lower lake region west-southwestward over the Ohio Valley, with high pressure to the northwest and southeast, snow fell in the Lake region and middle Missouri valley, rain in the Ohio and upper Mississippi valleys, and fresh to high winds from the lower Missouri valley over the south part of the Lake region. During the 28th the storm-center disappeared in the direction of Newfoundland. On this date rain fell in the middle and south Atlantic states, snow from the Lake region over New York and New England, the first snow of the season at New York, Philadelphia, and at points in Maryland and Virginia, and fresh to high winds along the New England and middle Atlantic coasts.

On the 29th the first snow of the season fell at stations in Georgia, the Carolinas, and Virginia, attending the presence of a low area off the south Atlantic coast, and high winds exceeding 50 miles per hour occurred on the North Carolina and Virginia coasts. At Norfolk, Va., the depth of snowfall on this date exceeded 6 inches.

XIII.—Apparently advanced from the extreme north Pacific coast, and the evening of the 29th was central over the British Northwest Territory, with pressure 29.40 at Edmonton; and at Prince Albert, N. W. T., the decrease in pressure in 12 hours was .52. Over Manitoba the abnormal rise in temperature in 12 hours exceeded 20°, the wind reached a velocity of 60 miles per hour from the south at Fort Canby, Wash., and rain fell on the north Pacific coast. During the 30th the center moved slowly eastward over the Saskatchewan Valley, with a slight decrease in pressure, and rain fell from the middle and north Pacific coasts over the plateau region north of the 40th parallel.

Tabulated statement showing principal characteristics of areas of high and low pressure.

Barometer.	First observed.			Last observed.		Duration.	Velocity per hour.	Maximum pressure change and maximum abnormal temperature change in twelve hours and maximum wind velocity.									
	Date.	Lat. N.	Long. W.	Lat. N.	Long. W.			Station.	Rise.	Date.	Station.	Fall.	Date.	Station.	Direction.	Miles per hour.	Date.
High areas.		°	°	°	°	Days.	Miles.		Inch.			°					
I	1	48	101	46	65	3.5	25	White River, Ont	.52	1	Cincinnati, Ohio	20	1	Battleford, N. W. T	se.	32	1
II	3	41	112	34	105	1.5	17	Montrose, Colo	.14	3	Tucson, Ariz	17	5	Cheyenne, Wyo	ne.	38	3
III	4	51	104	48	65	2.5	34	Prince Albert, N. W. T	.28	4	Huron, S. Dak	14	5	Pierre, S. Dak	e.	20	5
IV	7	44	123	38	112	1.5	19	Rio Grande City, Tex	.48	9	Abilene, Tex	29	8	Eureka, Cal	n.	22	7
V	9	43	126	43	69	6.0	24	Calgary, N. W. T	.80	10	Miles City, Mont	33	10	Valentine, Nebr	w.	42	11
VI	15	53	114	40	71	4.5	27	Rockliffe, Ont	.66	18	Fort Smith, Ark	33	16	Bismarck, N. Dak	nw.	42	16
VII	21	53	115	45	101	1.5	25	Medicine Hat, N. W. T	.88	21	Pueblo, Colo	36	21	do	nw.	38	22
VIII	27	47	101	37	81	3.0	22	Pierre, S. Dak	.64	27	Wilmington, N. C	37	29	Fort Sill, Okla. T	n.	36	28
Mean						3.0	24		.55			27				34	
Low areas.									Fall.			Rise.					
I*	1	50	69	50	62	0.5	13	Sydney, C. B. I	.30	1	Sydney, C. B. I	7	1	Block Island, R. I	nw.	36	1
II	2	50	128	48	85	2.5	33	Calgary, N. W. T	.52	2	Medicine Hat, N. W. T	24	2	Fort Canby, Wash	se.	61	2
III	4	52	128	51	94	2.5	25	Prince Albert, N. W. T	.42	5	Qu'Appelle, N. W. T	23	4	do	s.	63	4
IV	6	53	113	43	87	1.5	38	Medicine Hat, N. W. T	.26	6	Winnipeg, Man	16	7	do	w.	54	6
IVa	6	36	98	47	85	1.5	19	Pueblo, Colo	.22	5	Kansas City, Mo	20	6	Cheyenne, Wyo	w.	44	7
V	8	32	100	48	83	3.0	22	Alpena, Mich	.40	10	Knoxville, Tenn	18	9	Corpus Christi, Tex	nw.	48	9
VI	9	52	112	49	64	3.5	29	Calgary, N. W. T	.34	8	Pueblo, Colo	22	10	Fort Assinaboine, Mont	nw.	60	10
VII	15	49	98	50	63	3.0	25	Marquette, Mich	.70	15	Chatham, N. B	21	16	Buffalo, N. Y	sw.	54	17
VIII	17	52	117	49	87	2.0	29	Medicine Hat, N. W. T	.54	17	Fort Assinaboine, Mont	27	18	Chicago, Ill	s.	51	19
IX	20	52	110	48	86	1.5	36	Green Bay, Wis	.52	21	Prince Arthur, Ont	27	21	Fort Canby, Wash	w.	50	20
														Denver, Colo	nw.	50	21
IXa	20	37	103	48	86	1.5	36	Leavenworth, Kans	.34	20	Fort Stanton, N. Mex	16	19	Chicago, Ill	sw.	48	21
														Detroit, Mich	sw.	48	21
X	21	35	98	50	68	3.0	27	Albany, N. Y	.54	23	Palestine, Tex	16	21	Buffalo, N. Y	sw.	66	24
XI	24	53	113	45	68	2.5	38	Eastport, Me	.72	27	Bismarck, N. Dak	24	25	Chicago, Ill	sw.	50	26
XII	26	51	113	45	69	2.0	54	Qu'Appelle, N. W. T	.44	26	Pueblo, Colo	24	26	Fort Assinaboine, Mont	w.	48	26
XIII	29	54	114	54	104	1.0	18	Prince Albert, N. W. T	.52	30	Minnedosa, Man	21	29	Fort Canby, Wash	s.	60	29
Mean						2.1	29		.45			20				53	

*Continuation of low area X for October, 1891.

NORTH ATLANTIC STORMS FOR NOVEMBER, 1891 (pressure in inches and millimeters; wind-force by Beaufort scale).

The paths of storms that appeared over the west part of the north Atlantic Ocean during November, 1891, are shown on Chart I. These paths have been determined from observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

In November there is usually a decrease in mean pressure over the eastern part of the north Atlantic Ocean, the increase being most marked north of the British Isles, where the Iceland winter area of low pressure is forming. A decrease in pressure is also shown from this region westward to the Canadian Maritime Provinces. The region of greatest storm

frequency in November lies along a line traced from Newfoundland to north of the British Isles; the storms move with an average velocity of about 21 miles per hour; and an average of 2 storms traverse the ocean from the American to the European coasts.

The storms of the current month generally followed a normal path; they developed great energy over the eastern part of the ocean, and at least two storms appeared to traverse the ocean from coast to coast.

The month opened with a storm of marked energy central north-northwest of the Azores; the pressure fell to about 29.00 (737) at the center of disturbance, and whole gales were experienced along the trans-Atlantic steamship tracks between the 15th and 40th meridians. By the 2d the disturbance had changed position slightly to the eastward, and the morning of the 3d was central northeast of the Azores, in which position a marked loss of energy was shown. On the 4th the storm was located off the coast of Portugal, after which it disappeared east of the region of observation. The abnormal course of this storm was apparently due to high pressure northeast of its position. During the 1st a storm of considerable strength (low area I) advanced eastward over the north part of the Gulf of Saint Lawrence, whence it moved to Labrador by the 2d, and passing thence over mid-ocean in high latitudes disappeared in the direction of Iceland after the 4th. On the 3d an ill-defined cyclonic area was indicated over the Caribbean Sea south of Cuba. The morning of the 4th a storm was located south of Bermuda. Moving northeastward the disturbance reached the 34th parallel by the 5th, and the morning of the 6th was central on the northeast edge of the Banks of Newfoundland, with a decided increase of energy, and strong to whole gales between the 40th and 50th meridians. Moving thence east-northeast the center occupied a position northwest of the British Isles on the 8th. The pressure continued low north and west of the British Isles until the 10th, on which date gales of hurricane force and pressure below 29.00 (737) were reported east of the 20th meridian.

During the 11th a storm of great energy passed eastward over the British Isles, and during that and the preceding date immense damage was caused to property and shipping and many lives were lost along the coasts of Great Britain. At London, England, the barometer fell to 28.50 (724). The storm was also very severe along the French and Spanish coasts. On the 6th a cyclonic area which had apparently advanced from the southward was central about midway between Bermuda and the North Carolina coast, whence it moved east-northeast and the morning of the 9th was located east of the Banks of Newfoundland. It is not improbable that this storm passed rapidly north of east and united with the storm which visited the British Isles with such destructive violence during the 10th and 11th. On the 12th a storm-center appeared west-southwest of Ireland, where pressure falling to about 28.40 (721), and gales reaching force 10 to 12 were reported. This storm remained almost stationary until the 13th, without an apparent loss of energy, and on the 14th was central south of Ireland, after which it disappeared beyond the region of observation. On the 13th a storm (low areas V and VI) was central over the Gulf of Saint Lawrence. The morning of the 14th this storm was central north of the Grand Banks, whence it advanced to mid-ocean by the 15th, and disappeared north of the British Isles by the 17th. On the 17th a storm which had apparently developed over mid-ocean in the wake of the storm last referred to appeared near the 30th meridian, whence it moved northeastward with evidence of marked energy and disappeared beyond the region of observation after the 19th. On the 18th a storm (low area VII) moved northeastward over Labrador.

On the 21st a cyclonic area was indicated north of the Windward Islands, whence it moved northward without evidence of marked energy and apparently united with low area X over the Gulf of Saint Lawrence after the 24th. From the 22d to the close of the month the pressure continued low over the British Isles, and on the 28th the readings were 29.10 (739) in Ireland. During the 25th a storm (low area X) passed northeastward over Labrador, and thence north of the region of observation. On the 27th a storm, which was probably a continuation of low area X, was central over mid-ocean in high latitudes, and by the 28th this storm-center had advanced near the Irish coast, after which it apparently moved northward. During the 27th a storm (low area XI) moved northeastward over the Gulf of Saint Lawrence, and the morning of the 28th was central north of the Banks of Newfoundland, whence it passed east-northeast to mid-ocean, where the pressure continued low until the close of the month. During the 28th a storm (low area XII) moved over the south part of the Gulf of Saint Lawrence, and on the 29th was central north of the Grand Banks, whence it advanced to mid-ocean by the close of the month. Reports of the 29th and 30th indicated the presence off the North Carolina and Virginia coasts of a storm of limited energy.

OCEAN ICE.

The only Arctic reported for November, 1891, was an iceberg in N. 51° 58′, W. 55° 35′, on the 8th. In November, 1890, a small piece of ice was observed in N. 46° 35′, W. 47° 51′. In 1882, 1883, 1887, and 1888 no Arctic ice was reported near Newfoundland and the Grand Banks. In 1884 several icebergs were seen in N. 45° 56′, W. 52° 38′. In 1885 the only iceberg reported was observed in N. 48° 00′, W. 51° 10′. In 1886 one iceberg was reported in N. 45° 20′, W. 45° 26′.

OCEAN FOG.

The limits of fog belts west of the 40th meridian, as reported by shipmasters, are shown on Chart I by dotted shading. Near the Banks of Newfoundland fog was reported on 8 dates; between the 55th and 65th meridians on 3 dates; and west of the 65th meridian on 2 dates. Compared with the corresponding month of the last 4 years the dates of occurrence of fog east of the 55th meridian number 3 less than the average; between the 55th and 65th meridians the number of days of fog corresponded with the average; and west of the 65th meridian the dates of fog numbered 4 less than the average. The fog reported by shipmasters and noted at stations of the Weather Bureau along the New England and New York coasts generally attended the advance or passage of general storms.

TEMPERATURE OF THE AIR (expressed in degrees, Fahrenheit).

Many of the voluntary stations do not have standard thermometers or shelters.

The distribution of mean temperature over the United States and Canada for November, 1891, is exhibited on Chart II by dotted isotherms. In the table of miscellaneous meteorological data the monthly mean temperature and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for mean temperature and departure from the normal show, respectively, the average for the several districts. The normal for any district may be found by adding the departure to the current mean when the departure is below the normal and subtracting when above. The monthly mean temperature for regular stations of the Weather Bureau represents the mean of the maximum and minimum temperatures.

The mean temperature was highest over extreme southern Florida, where it rose above 70; a monthly mean of 72 was

reported at Seven Palms, in the north-central part of San Diego county, Cal. Over the Florida Peninsula, along the immediate Gulf coast, in Texas south of the 30th parallel, in the lower Colorado and Gila valleys, and at stations on the immediate coast of southern California the mean values were 60, and above. In Manitoba and northern Assiniboia the mean temperature was below 15; it was below 30 over the north part of the upper lake region, and in Wisconsin, except along the shore of Lake Michigan; and was also below 30 north of a line traced from central Iowa to extreme northwestern Montana, and from southwestern Montana over the mountain region of Colorado.

DEPARTURES FROM NORMAL TEMPERATURE.

The mean temperature was above the normal west of the Rocky Mountains, and from eastern Ontario over northern New England and the Canadian Maritime Provinces. The excess was most marked over the central and western parts of the plateau region between the 35th and 45th parallels and in central Oregon, where it exceeded 4, and the mean was more than 2 in excess over the entire country west of the Rocky Mountains, and in the lower Saint Lawrence valley. East of the Rocky Mountains, save in the extreme northeast, the month was cooler than usual. The most marked deficiency occurred from the middle Missouri to the upper Mississippi valleys, where it exceeded 6, and the deficiency was more than 2 from eastern Montana and Manitoba southeastward to the Atlantic coast between the 27th and 40th parallels.

DEVIATIONS FROM NORMAL TEMPERATURE.

The following table shows for certain stations, as reported by voluntary observers, (1) the normal temperature for November for a series of years; (2) the length of record during which the observations have been taken, and from which the normal has been computed; (3) the mean temperature for November, 1891; (4) the departure of the current month from the normal; (5) and the extreme monthly mean for November during the period of observation and the years of occurrence:

Deviations from normal temperature—Continued.

State and station.	County.	(1) Normal for the month of Nov.	(2) Length of record.	(3) Mean for Nov., 1891.	(4) Departure from normal.	(5) Extreme monthly mean for November.			
						Highest.	Year.	Lowest.	Year.
Arkansas.		°	Years	°	°	°		°	
Lead Hill	Boone	47.3	10	.....	.....	51.2	1890	44.1	1889
California.									
Sacramento	Sacramento	52.4	38	46.9	— 5.5	57.5	1873	44.9	1890
Connecticut.									
Middletown	Middlesex	39.4	25	39.5	+ 0.1	45.1	1859	31.6	1873
Florida.									
Merritts Island	Brevard	68.0	9	68.0	0.0	73.3	1883	60.0	1885
Georgia.									
Forsyth	Monroe	56.5	16	55.9	— 0.6	61.7	1874,'90	51.0	1880
Illinois.									
Peoria	Peoria	39.7	35	37.7	— 2.0	44.6	1867	30.2	1880
Riley	McHenry	33.7	35	30.1	— 3.6	40.3	1865	24.1	1880
Indiana.									
Vevay	Switzerland	43.7	26	43.2	— 0.5	48.7	1879	33.0	1869
Iowa.									
Cresco	Howard	28.8	19	26.5	— 2.3	34.7	1878	19.2	1880
Monticello	Jones	33.6	36	29.9	— 3.7	41.5	1859	24.4	1863
Logan	Harrison	36.2	17	34.7	— 1.5	41.9	1890	27.5	1880
Kansas.									
Lawrence	Douglas	40.1	23	39.5	— 0.6	45.8	1878	31.6	1880
Wellington	Sumner	41.4	12	.....	.....	45.5	1879	29.0	1880
Louisiana.									
Grand Cotean	Saint Landry	59.6	9	58.8	— 0.8	64.0	1883	56.2	1889
Maine.									
Orono	Penobscot	33.8	21	37.0	+ 3.2	38.6	1889	27.1	1875
Maryland.									
Cumberland	Allegany	40.0	32	40.9	+ 0.9	44.7	1883	32.7	1869
Massachusetts.									
Amherst	Hampshire	38.3	35	38.4	+ 0.1	44.1	1849	29.7	1873
Newburyport	Essex	39.7	13	39.7	0.0	42.1	1889	36.5	1880
Somerset	Bristol	40.7	19	42.3	+ 1.6	45.2	1889	33.0	1873
Michigan.									
Kalamazoo	Kalamazoo	37.3	15	35.7	— 1.6	43.4	1890	27.0	1880
Thornville	Lapeer	38.0	14	36.6	— 1.4	45.4	1877	28.4	1880
Minnesota.									
Minneapolis	Hennepin	29.2	26	25.5	— 3.7	36.3	1870	17.4	1880
Montana.									
Fort Custer	Custer	32.7	12	35.4	+ 2.7	39.9	1890	24.5	1880
New Hampshire.									
Hanover	Grafton	34.1	54	32.9	— 1.2	41.6	1849	24.8	1873
New Jersey.									
Moorestown	Burlington	42.0	28	42.0	0.0	45.3	1888	36.2	1873
South Orange	Essex	41.2	21	40.4	— 0.8	44.5	1885	32.6	1871
New York.									
Cooperstown	Otsego	34.9	37	34.9	0.0	38.5	1876,'77	26.8	1873
Palermo	Oswego	35.3	37	36.5	+ 1.2	41.9	1859	26.8	1873
North Carolina.									
Lenoir	Caldwell	45.3	19	42.7	— 2.6	49.8	1890	39.9	1872
Ohio.									
N'th Lewisburgh	Champaign	39.4	59	39.4	0.0	49.0	1849	29.0	1874, '80
Wauseon	Fulton	36.1	21	35.4	— 0.7	40.8	1890	27.9	1880
Oregon.									
Albany	Linn	43.9	12	48.0	+ 4.1	48.0	1891	40.7	1880
Eola	Polk	43.1	21	47.2	+ 4.1	49.6	1889	37.6	1872
Pennsylvania.									
Dyberry	Wayne	34.7	23	34.3	— 0.4	38.3	1883	25.7	1873
Grampian Hills	Clearfield	35.3	27	35.2	— 0.1	39.2	1890	28.3	1869
Wellsborough	Tioga	38.6	12	34.6	— 4.0	41.4	1885	34.6	1891
South Carolina.									
Statesburgh	Sumter	54.1	10	51.2	— 2.9	58.2	1890	51.2	1891
Tennessee.									
Austin	Wilson	47.9	21	47.8	— 0.1	54.5	1879	40.2	1872
Texas.									
New Ulm	Austin	59.0	19	59.3	+ 0.3	65.6	1879	49.6	1880
Vermont.									
Strafford	Orange	33.4	18	34.4	+ 1.0	37.9	1886	23.4	1873
Virginia.									
Birdsnest	Northampt'n	49.8	23	47.7	— 2.1	55.6	1881	43.0	1869
Washington.									
Fort Townsend	Jefferson	43.0	16	45.4	+ 2.4	47.3	1884	39.2	1880
Wisconsin.									
Madison	Dane	33.3	22	30.0	— 3.3	45.0	1864	23.4	1861

TEMPERATURE, JANUARY TO NOVEMBER.

For the period January to November, 1891, inclusive, the temperature averaged about normal in the middle Atlantic states, the Ohio Valley and Tennessee, the upper Mississippi valley, over the southern plateau region, and on the middle Pacific coast. Over the northern plateau region the excess averaged from 1 to 2, in the upper lake region and the extreme northwest about 1, and in New England, the lower lake region, and on the north and south Pacific coasts 0.5 to 1. The greatest deficiency for this period was noted at Key West, Fla., in the west Gulf states, and on the middle-eastern slope of the Rocky Mountains, where it was 1 to 2, and the deficiency was 0.5 to 1 in the south Atlantic and east Gulf states, the Rio Grande and Missouri valleys, on the northeast and southeast slopes of the Rocky Mountains, and over the middle plateau region.

YEARS OF HIGHEST MEAN TEMPERATURE FOR NOVEMBER.

At stations along the north and middle Pacific coasts and in the plateau region the mean temperature for the current month was the highest ever reported for November. On the north Pacific coast the mean was 0.2 to 1.8 higher, over the interior of California it was 0.4 to 2.0 higher, and over the northern and middle plateau regions it was 0.3 to 3.2 higher than previously noted for November. The highest mean temperature for November occurred generally in an area extending from the extreme northwest over the central valleys to the south Atlantic coast, along the immediate middle and south Pacific coasts, and in the lower Colorado valley in 1890; at stations in the middle and northern plateau regions in 1885; over the lower lake region and southern New York in 1883; at stations along the immediate Atlantic coast from southern New England to the Carolinas in 1881; in the west Gulf states in 1879; and in the upper lake region in 1878.

YEARS OF LOWEST MEAN TEMPERATURE FOR NOVEMBER.

At Wellsborough, Pa., Statesburgh, S. C., Auburn, Ala., and Huron, S. Dak., the mean temperature for the current month was reported the lowest ever noted for November. Except in Pennsylvania, New York, and New England, and in Washington and central and southern California, the coldest November in the last 21 years was noted generally over the United States in 1880. The lowest mean temperature for November occurred on the north and south Pacific coasts in 1886;

in central California in 1882; and in Pennsylvania, New York, and New England in 1873.

MAXIMUM TEMPERATURE.

At stations in the Rocky Mountain and plateau regions, on the Pacific coast, and in the Dakotas, Kansas, and southern Texas the maximum temperature was the highest ever reported for November. The maximum temperature rose to 100 in the Colorado Desert, Cal.; it was above 90 in the lower Colorado, Gila, and lower Rio Grande valleys, and at stations in the Gulf States; and reached 80 along the immediate south Atlantic coast, over the west Gulf states, Kansas, Oklahoma and Indian Territories, Texas, and the greater part of Arizona and southern California. The maximum temperature was lowest over the west Lake Superior region, where it was below 50, and the maximum readings were below 60 over northern New England, the upper lake region, and on the extreme north Pacific coast.

MINIMUM TEMPERATURE.

At Hatteras, N. C., New Orleans, La., Vicksburg, Miss., Des Moines, Iowa, and Rapid City, S. Dak., the minimum temperature was the lowest ever reported for November, and at Block Island, R. I., and Springfield, Ill., it was the same as the lowest minimum previously reported for the month. The minimum temperature fell below —20 in the Red River of the North Valley; it was below —10 in Minnesota and the Dakotas, and from eastern Montana over Wyoming to central Colorado; and was below zero in northern New England, and north of a line traced from eastern upper Michigan southwestward to northern Missouri, thence westward to central Colorado, thence southward over the mountain region to northwestern New Mexico, and thence north-northwest to extreme western Montana. The highest minimum temperature was reported over extreme southern Florida, where it was above 60, and it was above 40 over the south and east parts of the Florida Peninsula, in extreme southern Louisiana, and along the immediate Pacific coast south of the 40th parallel.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line traced southwestward over the northern part of the Florida Peninsula, and a second line traced inside the west Gulf coast line, and over southeastern Texas. The western limit of freezing weather is shown by a line traced from western Arizona over extreme southern Nevada, and thence along the western slopes of the Sierra Nevada and Cascade ranges of mountains to the extreme north Pacific coast.

RANGES OF TEMPERATURE.

The greatest daily ranges of temperature are shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature, 93, was noted at Valentine, Nebr.; the monthly ranges exceeded 80 in the Red River of the North Valley, and thence over South Dakota, northern Nebraska, Wyoming, and southern Montana. From this region the monthly ranges decreased eastward to less than 40 in north lower Michigan, thence increased to more than 70 over northern Vermont, and thence decreased to less than 40 on the extreme southeast New England coast and at Hatteras, N. C. The monthly ranges decreased to 20 at Key West, Fla., to less than 40 on the extreme southern Louisiana coast, to less than 40 on the extreme south California coast, to 30 on the middle California coast, and to less than 30 on the southwest Washington coast.

PERIODS OF HIGH TEMPERATURE.

The month opened with the highest temperature of the month in the south Atlantic states.

On the 3d a warm wave appeared on the north Pacific coast, with maximum temperature 1 to 2 higher than previously reported for November at Tatoosh Island and Neah Bay, Wash., and Roseburgh, Oregon. On the 4th the warm wave extended over the northern and southern plateau regions, the middle Pacific coast, and the west part of the middle plateau region, with maximum temperature 7 to 9 higher over the northern plateau region, 2 higher at Winnemucca, Nev., and 1 higher at Yuma, Ariz., than previously reported for November. Extending eastward the warm wave was attended by the highest temperature on record for November at Salt Lake City, Utah, Montrose, Colo., Cheyenne, Wyo., Rapid City, S. Dak., and Fort Buford, N. Dak., on the 5th; at Concordia and Leavenworth, Kans., on the 6th; at San Antonio, Tex., on the 7th; and at Buffalo, N. Y., on the 9th. The warm wave reached the Atlantic coast on the 10th, and the temperature continued high in the middle Atlantic and New England states until after the 12th.

On the 9th and 10th the temperature was high on the middle and south Pacific coasts, the maximum at San Francisco, Cal., on the 10th, 78, being as high as previously noted for November. On the 15th a warm wave appeared over the upper Mississippi valley, and the highest temperature of the month was reported at a number of stations in that region; extending eastward to the Atlantic coast by the 17th, this warm wave was attended by the highest temperature of the month at points in New England, eastern New York, and Florida. The highest temperature of the month was noted at Brownsville, Tex., on the 28th, and at Titusville, Fla., on the 29th.

PERIODS OF LOW TEMPERATURE.

From the 14th to 16th a cool wave overspread the Pacific coast and the plateau region, with temperature below 40, save along the immediate middle and south California coasts; it reached the Rocky Mountains by the 17th, when the minimum temperature fell to —3 at Rapid City, S. Dak., 1 lower than previously noted for November at that station; and advanced to the Atlantic coast by the 18th, with temperature 12 to 16 below freezing in Pennsylvania and Maryland, 14 below freezing in east Tennessee and northern Georgia, and 2 below freezing at Savannah, Ga. On the 28th a cold wave appeared over the north-central part of the country, with temperature —20 to —30 in the Red River of the North Valley. This cold wave extended over the middle and upper Mississippi valleys and the Lake region during the 29th. On this date the minimum temperature at Des Moines, Iowa, —10, was 1 lower than previously reported for November, and the minimum at Springfield, Ill., 4, was the same as the lowest reported in November of preceding years. By the 30th the cold wave had extended over the Atlantic coast from the Canadian Maritime Provinces to Key West, Fla. On this date the minimum temperature fell to 22 at Vicksburg, Miss., and to 30 at New Orleans, La., and was 1 and 2, respectively, lower than previously reported at those stations for November; it was 31, the lowest by 1, at Hatteras, N. C., and 19, as low as ever reported in November, at Block Island, R. I.; the minimum temperature at New Brunswick, N. J., 10, was the lowest November minimum in 34 years, and the line of freezing weather extended over the interior of the Florida Peninsula to the 29th parallel, south of stations on the east Gulf coast, and nearly to the immediate west Gulf coast.

FROST.

The first heavy frost of the season was reported as follows: 7th, Southport, N. C. 9th, Grand Central Mill, Ariz.; El Paso, Tex. 10th, Guthrie, Okla. T.; Gallinas, Graham, Childress, and New Braunfels, Tex. 12th, Abilene and New Ulm, Tex.; Dallas, Ark. 14th, Port Angeles, Wash.; Georgetown and Upper Lake, Cal. 15th, Hydesville, Lodi, Sacramento, and San Ardo, Cal. 16th, Florence and Signal, Ariz.; Turlock, Cal.; Portland and Roseburgh, Oregon. 17th, Palestine, Tex. 18th, Mobile, Ala.; Jacksonville, Tallahassee, and Pensacola, Fla.; Savannah and Quitman, Ga.; San Antonio, Brady, and Hallettsville, Tex. 30th, New Orleans, La.; Charleston, S. C.

On the 7th heavy frost damaged vegetation about Wilmington and Southport, N. C. The heavy frost of the 12th at Dallas, Ark., killed tomato plants. On the 14th tender plants on

low ground were killed at Georgetown, Cal. Vegetation was badly injured at Sacramento, Cal., on the 15th. At Jacksonville, Fla., tender vegetation was injured by frost and ice formed on the 18th. During the week ending November 21st vegetation was slightly injured by frost in parts of Los Angeles and Orange counties, Cal.

The heavy frost of the 18th in northern Florida and along the Gulf coast was about two weeks earlier than the average date of first killing frost in those districts.

Attending the cold wave of the last 3 days of the month frost occurred on the Gulf coast, and on the 30th it was reported as far south as Pasadena, Pasco Co., Fla.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada, for November, 1891, as determined from the reports of nearly 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In November the monthly precipitation is usually greatest on the northwest coast of Washington, where it exceeds 10.00; it exceeds 8.00 along the immediate Pacific coast north of the 40th parallel; it exceeds 4.00 in the Mississippi Valley south of the 36th parallel, along the Gulf coast from Galveston, Tex., to the Florida Peninsula, in an area extending from the west part of the Carolinas over the eastern half of Tennessee, along the North Carolina coast, and along the immediate Atlantic coast north of New Jersey. West of a line traced from the Red River of the North Valley to central Texas the normal precipitation for November is generally less than 1.00, except along the Pacific coast, and in the mountains of Idaho and western Montana.

In November, 1891, the monthly precipitation was greatest on the extreme north Pacific coast, where it exceeded 20.00, and a depth of 23.06 was reported at Neah Bay, Wash. The monthly amount exceeded 10.00 at stations in east-central Arkansas, central Illinois, at Central City, Ky., Cheneyville, La., Natchez, Miss., Linville, N. C., and Dyersburgh, Tenn., and was more than 8.00 along the Oregon and Washington coasts, in areas in the middle and lower Mississippi and lower Ohio valleys, and in western North Carolina. Over the greater part of southern California and thence eastward over the southern plateau region to western New Mexico there was an almost entire absence of precipitation, and in the extreme northwest and over the greater part of the country west of the 100th meridian, save on the north Pacific coast, and in the mountains of Idaho and western Montana, the monthly amount was less than 1.00.

DEPARTURES FROM NORMAL PRECIPITATION.

The monthly precipitation was in excess of the average amount for November from the central part of the Lake region southward over the Ohio and Mississippi valleys to southern Alabama and Mississippi; it was also in excess from the north Pacific coast to the Red River of the North Valley. At Neah Bay, Wash., the excess was more than 10.00; it exceeded 5.00 along the Washington coast; and exceeded 2.00 in an area extending from Georgian Bay to the eastern lower Mississippi valley. In the Atlantic coast states and Florida, from Texas westward to the south and middle Pacific coasts, and from the southeastern slope of the Rocky Mountains to western Lake Superior the monthly precipitation was deficient. The most marked deficiency, 4.06, was noted at Sydney, C. B. I., and there was a deficiency of more than 2.00 on the North Carolina coast, at points along the New England coast, in central Texas, and at San Francisco and Red Bluff, Cal.

Considered by districts the average percentage of the normal in districts where the precipitation was in excess was about as follows: north Pacific coast, 170; upper Mississippi valley, 160; extreme northwest, 155; upper lake region, 150; lower lake region, and Ohio Valley and Tennessee, 130; east Gulf states, 120. In districts where the precipitation was deficient the percentage of the normal was about as follows: south Pacific coast, 4; southern plateau region, 6; southeastern slope of the Rocky Mountains, 9; middle Pacific coast, 18; Rio Grande Valley, 27; middle plateau region, 37; middle-eastern slope of the Rocky Mountains, 40; New England, 56; middle Atlantic states, 57; Missouri Valley, 62; south Atlantic states, 67; Key West, Fla., 80; west Gulf states, 90. On the northeast slope of the Rocky Mountains, and at Spokane Falls, Wash., the monthly precipitation averaged about normal.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for November for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for November, 1891; (4) the departure of the current month from the average; (5) and the extremes for November during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Nov.	(2) Length of record.	(3) Total for Nov., 1891.	(4) Departure from average.	(5) Extremes for Nov.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Lead Hill	Boone	4.11	10	8.85	+4.74	8.85	1891	2.50	1885
California.									
Sacramento	Sacramento	2.01	41	0.46	−1.55	9.65	1885	0.00	'50,'62
Connecticut.									
Middletown	Middlesex	3.90	31	3.00	−0.90	7.29	1877	0.75	1890
Florida.									
Merritts Island	Brevard	2.45	13	1.67	−0.78	5.67	1884	0.17	1886
Georgia.									
Forsyth	Monroe	3.44	17	3.56	+0.12	5.41	1888	0.50	1890
Illinois.									
Peoria	Peoria	2.32	35	4.08	+1.76	4.93	1879	0.31	1865
Riley	McHenry	2.30	40	3.75	+1.45	8.38	1876	0.08	1862
Indiana.									
Logansport	Cass	3.59	15	7.69	+4.10	7.69	1891	1.43	1880
Vevay	Switzerland	3.29	26	5.77	+2.48	6.34	1888	0.73	1872
Iowa.									
Cresco	Howard	1.52	20	1.01	−0.51	5.20	1879	0.18	1875
Monticello	Jones	2.39	36	2.55	+0.16	5.72	1862	0.12	1865
Logan	Harrison	1.37	21	0.60	−0.77	3.85	1871	0.00	1873
Kansas.									
Lawrence	Douglas	1.93	25	0.81	−1.12	5.15	1879	0.01	1872
Wellington	Sumner	1.23	12	.....	.....	3.14	1890	0.18	1886
Louisiana.									
Grand Coteau	St. Landry	3.10	8	4.85	+1.75	5.72	1883	1.51	1890
Maine.									
Orono	Penobscot	4.59	21	2.78	−1.81	8.76	1886	1.78	1882
Maryland.									
Cumberland	Allegany	2.27	20	2.92	+0.65	5.34	1889	0.82	1887
Massachusetts.									
Amherst	Hampshire	4.65	46	2.71	−1.94	7.48	1854	1.33	1882
Newburyport	Essex	4.38	13	2.34	−2.04	8.15	1889	0.97	1882
Somerset	Bristol	4.59	19	2.95	−1.64	9.02	1876	1.04	1890
Michigan.									
Kalamazoo	Kalamazoo	2.72	15	4.96	+2.24	5.77	1877	1.25	1882
Thornville	Lapeer	2.97	14	5.32	+3.35	5.32	1891	1.42	1882
Minnesota.									
Minneapolis	Hennepin	1.32	25	0.82	−0.50	4.13	1868	0.31	1878
Montana.									
Fort Custer	Custer	0.41	12	1.68	+1.27	1.68	1891	0.05	1887
New Hampshire.									
Hanover	Grafton	3.75	39	2.00	−1.75	6.62	1885	0.59	1882
New Jersey.									
Moorestown	Burlington	3.37	28	2.30	−1.07	7.02	1889	0.98	1890
South Orange	Essex	3.63	21	2.86	−0.77	11.37	1889	0.78	1890
New York.									
Cooperstown	Otsego	3.07	37	3.15	+0.08	5.38	1858	1.45	1876
Palermo	Oswego	3.67	37	2.88	−0.79	6.60	1866	1.01	1882
North Carolina.									
Lenoir	Caldwell	3.33	19	4.50	+1.17	7.60	1877	0.00	1890
Ohio.									
N. Lewisburgh	Champaign	3.38	16	7.20	+3.82	7.20	1891	0.85	1884
Wauseon	Fulton	3.13	19	5.02	+1.89	5.83	1881	1.46	1884

Deviations from average precipitation—Continued.

State and station.	County.	(1) Average for the month of Nov.	(2) Length of record.	(3) Total for Nov., 1891.	(4) Departure from average.	(5) Extremes for Nov.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Oregon.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches.*		*Inches*	
Albany	Linn	3.83	12	7.32	+3.49	8.40	1885	0.44	1890
Eola	Polk	4.18	21	6.93	+2.75	13.01	1877	1.42	1890
Pennsylvania.									
Dyberry	Wayne	3.27	20	1.85	−1.42	7.00	1886	1.40	1882
Grampian Hills	Clearfield	3.01	22	3.27	+0.26	6.03	1886	1.42	1872
Wellsborough	Tioga	4.43	12	4.11	−0.32	9.07	1889	0.93	1890
South Carolina.									
Statesburgh	Sumter	1.86	10	2.01	+0.15	3.90	1882	0.87	1886
Tennessee.									
Austin	Wilson	3.87	21	5.72	+1.85	7.24	1874	1.57	1890
Texas.									
New Ulm	Austin	4.85	19	2.61	−2.24	14.93	1873	0.48	1887
Vermont.									
Strafford	Orange	3.51	18	2.05	−1.46	6.20	1888	0.50	1874
Virginia.									
Birdsnest	Northampton	2.94	22	2.10	−0.84	5.80	1885	T.	1890
Washington.									
Fort Townsend	Jefferson	2.68	16	3.30	+0.62	9.21	1874	0.39	1884
Wisconsin.									
Madison	Dane	2.02	22	3.31	+1.29	4.92	1856	0.53	1870

PRECIPITATION, JANUARY TO NOVEMBER.

For the period January to November, 1891, inclusive, the precipitation averaged about normal in the middle Atlantic states, at Key West, Fla., in the Ohio Valley and Tennessee, and over the middle plateau region. In the extreme northwest, on the northeastern and middle-eastern slopes of the Rocky Mountains, and on the north Pacific coast the precipitation was one-tenth to three tenths greater than usual, and in the New England, south Atlantic, east and west Gulf states, the Rio Grande, upper Mississippi and Missouri valleys, the Lake region, on the southeastern slope of the Rocky Mountains, over the southern and northern plateau regions, and on the middle and south Pacific coasts the precipitation was seven-tenths to nine-tenths of the normal amount for the period named.

YEARS OF GREATEST PRECIPITATION FOR NOVEMBER.

The greatest monthly precipitation ever reported for November occurred at Mobile, Ala., Lead Hill, Ark., Columbus, Cleveland, Sandusky, and North Lewisburgh, Ohio, Detroit, Port Huron, and Thornville, Mich., Fort Buford, N. Dak., Fort Custer, Mont., Port Angeles, Neah Bay, and Fort Canby, Wash., and Astoria, Oregon, in 1891; over Arkansas and northern Louisiana in 1889; along the middle and south Pacific coasts and over the west part of the middle plateau region in 1885; from the lower Missouri valley over upper Michigan and the northern part of lower Michigan in 1879; and in Maryland and Virginia, except along the eastern coasts, in 1877.

In November, 1891, the excess above the greatest monthly precipitation previously reported for November was 0.24 at Mobile, Ala.; 3.08 at Lead Hill, Ark.; 0.07 at Columbus, Ohio, to 0.59 at Detroit, Mich.; 0.44 and 0.58 at Fort Buford, N. Dak., and Fort Custer, Mont., respectively; and 0.38 at Fort Canby, Wash., to 3.46 at Neah Bay, Wash.

YEARS OF LEAST PRECIPITATION FOR NOVEMBER.

The least monthly precipitation ever reported for November occurred at Abilene and El Paso, Tex., Concordia, Kans., Montrose, Colo., and Keeler, Cal., in 1891, the deficiency as compared with the least amount previously reported varying from 0.01 at El Paso, Tex., and Keeler, Cal., to 0.49 at Montrose, Colo.; on the Pacific coast and the west parts of the middle and northern plateau regions, and in an area extending from southern New England along the coast to Virginia and North Carolina and thence to the middle Gulf coast in 1890; in the extreme upper Mississippi valley, and thence over the upper valley of the Red River of the North, northern and western Iowa, and eastern Nebraska in 1888; over the greater part of New England in 1882; in the upper Mississippi valley in 1875; and in the Ohio Valley in 1872.

In 1891, when the monthly precipitation was the greatest on record for November at stations on the central Gulf coast, northern Arkansas, the west part of the lower lake region, northwestern North Dakota, eastern Montana, and along the Washington coast, it was the least on record for the month at stations in the south-central and southwestern districts.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in November, 1891:

Monthly precipitation to equal or exceed 10.00.

State.	Number of stations.	State.	Number of stations.
Oregon	6	Louisiana	1
Washington	5	Mississippi	1
Illinois	2	North Carolina	1
Arkansas	1	Tennessee	1
Kentucky	1		

Precipitation to equal or exceed 2.50 *in* 24 *hours.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Mississippi	21	8–9, 9, 20–21, 21, 21–22.	Washington	3	7–8, 8, 8–9.
Tennessee	11	9, 9–10, 10, 16. 22.	Georgia	2	22, 26.
Arkansas	8	8, 15, 16, 20.	Kentucky	2	16, 21.
Oregon	6	3, 4.	Michigan	2	9, 9–10.
Alabama	5	9, 9–10, 20–21.	Missouri	2	15–16, 22–23,
Louisiana	5	8–9, 9, 21.	North Carolina	2	9–10.
Illinois	4	8–9, 16, 21–23, 22–23.	Ohio	2	23.
			Indiana	1	9.
			Texas	1	16.
			West Virginia	1	23.

Precipitation to equal or exceed 1.00 *in* 1 *hour.*

State.	Number of stations.	Dates.	State.	Number of stations.	Dates.
Texas	4	1, 8, 9, 16.	South Carolina	1	11.
Mississippi	1	9.	West Virginia	1	23.

Table of excessive precipitation, November, 1891.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Cordova		3.02	9			
Decatur (1)		4.17	9–10			
Decatur (2)		3.89	9–10			
Lynn		2.86	9–10			
Do		2.78	20–21			
Mobile		3.06	9–10			
Mount Vernon Barracks		2.92	9			
Arkansas.						
Black Rock		2.85	15			
Brinkley		3.80	8			
Fayetteville		3.80	8			
Harrisburgh		3.50	16			
Monticello		2.92	8			
Newport (2)		2.60	8			
Osceola	10.03	3.25	8			
Do		3.27	16			
Ozone		3.78	20			
Georgia.						
Athens (1)		2.65	28			
Gillsville		2.60	22			
Illinois.						
Golconda		2.56	16			
Louisville		2.75	22–23			
Olney (2)	10.92	5.98	21–23			
Pana	10.09	2.50	8–9			
Indiana.						
Huntingburgh		3.00	9			
Kentucky.						
Canton		2.89	16			
Central City	10.01					
Edmonton		2.55	21			

Table of excessive precipitation—Continued.

State and station.	Monthly rainfall 10 inches, or more.	Rainfall 2.50 inches, or more, in 24 hours.		Rainfall of 1 inch, or more, in one hour.		
		Amt.	Day.	Amt.	Time.	Day.
Louisiana.	*Inches.*	*Inches.*		*Inches*	*h.m.*	
Cameron		3.59	21			
Cheneyville	11.14	5.70	9			
Edgard		3.08	9			
Emilie		3.52	9			
Marksville		5.25	8-9			
Michigan.						
Berrien Springs (2)		2.50	9			
Mottville		3.26	9-10			
Mississippi.						
Aberdeen		3.50	22			
Agricultural College		4.45	21			
Batesville		2.60	22			
Booneville		6.12	21-22			
Brookhaven		3.28	22			
Canton		3.30	21			
Columbus (1)		2.72	20-21			
Columbus (2)		3.15	21-22			
Fayette		3.60	8-9			
Do		3.98	20-21			
Hazelhurst		5.00	22			
Kosciusko		5.00	21-22			
Louisville		3.70	21			
Meridian		3.15	9	1.26	1 00	9
Natches	10.30	4.50	9			
Okolona		3.10	22			
Palo Alto		3.54	21-22			
Pontotoc		5.02	22			
Ricezi		4.34	22			
Summit		2.90	9			
Do		2.81	22			
Vicksburg		4.28	21-22			
Washington		4.08	8-9			
Water Valley		3.01	21			
Missouri.						
Zeltonia		2.61	15-16			
Do		2.90	22-23			
North Carolina.						
Hendersonville		4.00	9-10			
Linville	10.79	5.25	9-10			
Ohio.						
Elyria		4.54	23			
Oberlin		3.06	23			
Oregon.						
Astoria	15.18					
Bandon		2.78	4			
Burns		3.75	3			
Cascade Locks	13.25					
Gardiner	10.29					
Langlois	14.53					
Newport	10.51					
Toledo	10.81					
South Carolina.						
Saint Georges				1.85	1 40	11
Tennessee.						
Bethel Springs		2.50	22			
Covington (2)		2.50	9			
Dyersburgh (2)	11.45	5.10	16			
Fayetteville		2.84	10			
Florence Station		2.70	9-10			
Lynnville		3.68	9-10			
Nashville		3.04	9-10			
Nunnelly		2.50	22			
Rockwood		3.20	22			
Sparta		2.56	22			
Union City		2.70	16			
Texas.						
Corpus Christi				1.59	0 55	1
Hallettsville				1.60	0 30	8
Longview		2.55	16			
Round Rock				1.52	1 00	16
Sugar Land				1.87	1 30	9
Washington.						
Aberdeen	19.96	3.90	8			
Fort Canby (Weather Bureau)	14.10					
Fort Canby (Post Hospital)	14.25					
Neah Bay	23.06	2.55	7-8			
Olympia	10.83					
Tatoosh Island	17.68	2.84	8-9			
West Virginia.						
Bluefield		2.50	23	2.50	2 00	23

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during November, 1891, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Atlanta, Ga	0.07	23	0.11	23	0.38	10
Bismarck, N. Dak	0.01	10	0.02	10	0.08	10

Maximum rainfall in one hour or less—Continued.

Station.	Maximum fall in—					
	5 min.	Date.	10 min.	Date.	1 hour.	Date.
	Inch.		*Inch.*		*Inch.*	
Boston, Mass	0.06	17, 27	0.10	17, 27	0.41	27
Buffalo, N. Y	0.03	11	0.05	11	0.15	23
Cincinnati, Ohio	0.10	10	0.11	10	0.25	10
Chicago, Ill	0.02	9	0.04	9	0.13	8
Cleveland, Ohio *						
Denver, Colo †						
Detroit, Mich	0.03	22	0.05	22	0.22	22
Dodge City, Kans ‡						
Duluth, Minn †						
Eastport, Me	0.07	17	0.10	17	0.25	17
Galveston, Tex	0.06	24	0.10	24	0.35	16
Indianapolis, Ind	0.04	10	0.08	10	0.18	10
Jacksonville, Fla	0.16	29	0.17	29	0.30	10
Jupiter, Fla	0.20	10	0.35	10	0.90	10
Kansas City, Mo	0.01	16	0.02	16	0.10	16
Key West, Fla *						
Marquette, Mich	0.02	11	0.03	11	0.15	11
Memphis, Tenn	0.40	16	0.70	16	0.95	16
New York, N. Y	0.08	23	0.10	23	0.17	26
New Orleans, La	0.08	22	0.14	22	0.61	22
Norfolk, Va	0.03	29	0.06	29	0.16	29
Philadelphia, Pa	0.05	11	0.10	11	0.17	11
Philadelphia Water Works	0.08	23	0.12	23	0.22	17
Pittsburg, Pa	0.07	17	0.10	17	0.13	17
Portland, Oregon	0.05	9	0.06	9	0.20	3
Saint Louis, Mo	0.15	22	0.26	22	0.61	22
Saint Paul, Minn †						
San Diego, Cal ‡						
San Francisco, Cal ‡						
Savannah, Ga	0.20	10	0.25	10	0.43	10
Washington, D. C	0.35	23	0.35	23	0.40	23
Wilmington, N. C	0.04	10	0.08	10	0.26	10

*Self-register out of order. †No record on account of snow. ‡Less than 0.05 in 1 hour.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for November during the last 22 years:

Excessive monthly precipitation.

State.	No. years noted.	State.	No. years noted.
Washington	12	Arkansas	2
Oregon	9	Alabama	1
California	5	Colorado	1
Maryland	4	Connecticut	1
Texas	4	Delaware	1
Mississippi	4	Georgia	1
North Carolina	4	Kansas	1
Louisiana	3	Michigan	1
Massachusetts	3	Pennsylvania	1
New York	3	Wisconsin	1
Florida	2	Illinois	1
Indiana	2	Kentucky	1
New Hampshire	2	Tennessee	1
New Jersey	2		

Excessive daily precipitation (24 hours).

State.	No. years noted.	State.	No. years noted.
Louisiana	17	South Carolina	6
Texas	17	Washington	6
North Carolina	16	California	5
Massachusetts	12	Kentucky	5
Alabama	12	Michigan	5
Tennessee	12	Ohio	5
Georgia	11	Maryland	3
Florida	10	Rhode Island	3
Mississippi	10	Virginia	3
New York	9	Wisconsin	3
Illinois	9	West Virginia	3
Indiana	9	Colorado	2
Connecticut	7	Delaware	2
Pennsylvania	7	Indian Territory	2
Arkansas	7	Vermont	2
Missouri	7	Arizona	1
Oregon	7	The Dakotas	1
Iowa	6	District of Columbia	1
Kansas	6	Minnesota	1
Maine	6	Nebraska	1
New Hampshire	6	New Mexico	1
New Jersey	6		

Excessive hourly precipitation.

State.	No. years noted.	State.	No. years noted.
Texas	7	Kansas	1
Florida	3	Kentucky	1
North Carolina	3	Michigan	1
Tennessee	3	Nebraska	1
Mississippi	3	New York	1
California	2	Pennsylvania	1
Indiana	2	South Carolina	1
Alabama	1	Virginia	1
District of Columbia	1	West Virginia	1
Georgia	1		

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for November during the last 22 years:

Monthly.

Station and state.	Am't.	Year.	Station and state.	Am't.	Year.
	Inches.	*Year.*		*Inches.*	*Year.*
Crescent City, Cal	31.93	1885	Neah Bay, Wash	23.06	1891
Delta, Cal	29.38	1885	Fort Stevens, Oregon	22.21	1877
Fort Gaston, Cal	24.54	1885	Point Pleasant, La	20.89	1877
Georgetown, Cal	24.14	1875			

Daily (24 hours).

Station and state.	Amount.	Date.	Station and state.	Amount.	Date.
	Inches.			*Inches.*	
Fort Barrancas, Fla	10.39	26, 1878	Cheneyville, La	5.70	9, 1891
San Luis Obispo, Cal	10.04	17–18, 1885	Galveston, Tex	5.63	6, 1872
Bluff Settlement, Tex	8.00	14–16, 1874	Fayette, Miss	5.60	27–28, 1880
Cheneyville, La	7.91	15–16, 1890	Wellsborough, Pa	5.50	23, 1884
Fort Seldon, N. Mex	7.75	24–26, 1888?	Boston, Mass	5.43	20–21, 1876
Dover, Del	7.58	18–20, 1876	Barnegat City, N. J	5.33	24–25, 1877
Point Pleasant, La	7.10	20, 1877	Linville, N. C	5.25	9–10, 1891
Marion, Ala	7.00	6–7, 1885	Ft. Independence, Mas	5.25	21–22, 1874
Melissa, Tex	7.00	1, 1877	Newport, Mich	5.25?	24–25, 1884
Belmont Farm, Tex	7.00	1, 1877	Charleston, Ill	5.21	26–27, 1887
Point Pleasant, La	6.80	8, 1877	Okaloosa, La	5.20	9, 1879
Quitman, Ga	6.70	5–6, 1880	Mattoon, Ill	5.11	26, 1887
Milton, Mass	6.20	25–27, 1888?	Dyersburgh, Tenn	5.10	16, 1891
Booneville, Miss	6.12	21–22, 1891	Palestine, Tex	5.05	10, 1883
Fort Barrancas, Fla	6.07	16, 1881	White Plains, N. Y	5.04	27–28, 1890
Point Pleasant, La	6.03	11–12, 1881	Lake Charles, La	5.00	16, 1890
Greensborough, Ala	6.00	6–7, 1885	Sandy Springs, Md	5.00	23–24, 1877
Red Bluff, Cal	5.93	8–9, 1885	Vandalia, Ill	5.00	26, 1887
Charleston, S. C	5.84	16–17, 1889	Elsworth, N. C	5.00	28, 1880
Thatchers Island, Mass	5.75	18–19, 1878	Reidsville, N. C	5.00	7–8, 1885

One hour and less.

Station and state.	Amount.	Time.	Date.
	Inches.	*h. m.*	
New York, N. Y	0.25	0 02	18, 1886
Memphis, Tenn	0.40	0 05	16, 1890
Washington, D. C	0.35	0 05	23, 1891
Jupiter, Fla	0.30	0 05	29, 1890
Galveston, Tex	1.48	0 15	5, 1877
Vicksburg, Miss	1.82	0 20	15, 1879
Galveston, Tex	3.50	0 30	2, 1873
Hallettsville, Tex	1.60	0 30	8, 1891

SNOW (in inches and tenths).

The first snow of the season was reported as follows: 1st, Grand Haven, Manistee, and Thornville, Mich.; Duluth, Minn.; Fort Niobrara and Fremont, Nebr.; Kimball, Onida, and Tindall, S. Dak.; Peshtigo, Wis. 2d, Wichita, Kans.; Farmington, Me.; Grand Forks, N. Dak.; Castlewood and Huron, S. Dak.; Dodgeville, Wis. 3d, Olney, Sandwich, and Springfield, Ill.; Marion, Ind.; Louisville and Shelbyville, Ky.; Mottville, Mich.; Cincinnati and Kenton, Ohio; La Crosse, Wis. 4th, La Fayette, Ind.; Nantucket, Mass.; Albion and Lansing, Mich.; Sandusky, Ohio; Aqueduct, Pa.; Harpers Ferry, W. Va. 5th, Washington, D. C.; Baltimore, Frederick, Taneytown, and Woodstock, Md.; Blooming Grove, Corry, Harrisburg, Huntingdon, Lock Haven, and Wilkes Barre, Pa.; Fort Myer and Woodstock, Va.; Martinsburgh, W. Va. 6th, Power, N. Dak. 7th, Gering, Nebr. 8th, Antelope Springs, Chama, Embudo, Fort Stanton, Dulce, Estalina Springs, Monero, Santa Fe, Taos, and Wallace, N. Mex.; Parker, S. Dak.; Hansford and Hartley, Tex.; Levan, Utah. 10th, Morris, Minn.; Napoleon, N. Dak.; Aberdeen, Mitchell, and Wolsey, S. Dak.; Appleton, Wis. 11th, Aurora and Ottawa, Ill.; Des Moines and Dubuque, Iowa; Minneapolis, Red Wing, and Saint Paul, Minn.; Crete, Harvard, and Lincoln, Nebr.; Ellendale, N. Dak.; Forestburgh, Forest City, Gary, Howard, Millbank, Parker, Parkston, Pierre, Wentworth, Wessington Springs, and Yankton, S. Dak.; Walla Walla, Wash.; Beloit, Black River Falls, Harvey, Kenosha, Meadow Valley, Milwaukee, Oshkosh, Prairie du Chien, Sparta, Viroqua, Waukesha, and Whitehall, Wis. 12th, Payette, Idaho; Davenport, Iowa; Abilene, Allison, Concordia, and Manhattan, Kans.; Columbia, Fayette, Glasgow, Harrisonville, La Monte, Sedalia, and Warrensburgh, Mo.; Hartington, Marquette, and North Platte, Nebr.; Fargo, N. Dak.; Beulah, Oregon; Pomeroy, Wash.; Embarrass and Green Bay, Wis. 13th, Rock Island Arsenal, Ill.; Sioux Falls, Iowa; Globe and Wakefield, Kans.; Berrien Springs, Mich.; Fox Creek, Marshall, and Saint Louis, Mo.; De Soto, Nebr.; Lakeview, Oregon.

14th, Charleston, Griggsville, Oswego, Chicago, Riley, Sycamore, and Winnebago, Ill.; Indianapolis, Ind.; Atchison, Kans.; Kalamazoo, Mich.; Napoleon, Sidney, Wauseon, Ohio; Erie, Pa.; Strafford, Vt.; Spokane, Wash. 15th, Hennepin, Ill.; Woodward, Ind. T.; Jamestown, N. Y.; Bement, Caledonia, Canton, Mansfield, Tiffin, Toledo, Westerville, Wheeler, and Wooster, Ohio; Fort Simcoe, Wash.; Menomonie and Osceola Mills, Wis. 16th, Black Rock, Ark.; Dodge City, Lakin, and Oberlin, Kans.; Earlington, Ky.; Royalston, Mass.; Springfield, Mo.; West Milton, Ohio; East Sound, Fort Townsend, Olympia, Port Angeles, and Tatoosh Island, Wash. 17th, Mount Carmel, Ill.; Jeffersonville, Logansport, and Vevay, Ind.; Wallace, Kans.; Central City, Edmonton, Fort Thomas, Louisa, Newport Barracks, and Richmond, Ky.; Manton, Marshall, and Port Huron, Mich.; Bellevue, Columbus, Demos, Gratiot, North Lewisburgh, and Portsmouth, Ohio; Chattanooga, Tenn.; Charleston, Glenville, Parkersburgh, Tannery, and Wheeling, W. Va. 18th, Winslow, Ark.; East Canterbury, N. H.; Lowville, N. Y.; Marietta, Ohio; Easton, Pa.; Grapevine, Tex.; Piedmont, W. Va. 19th, Mountains near Redding Cal.; Ozone, Ark.; Madison, Wis.

20th, Pine Bluff, Ark.; Shelbina, Mo. 21st, Fort Supply, Ind. T.; Horton, Hutchinson, and Salina, Kans.; Centreville, Harrison, and Concordia, Mo. 22d, Conway, Corner Stone, Harrisburgh, Hope, Osceola, Paragould, Stuttgart, Arkadelphia, Hot Springs, Little Rock, and Prescott, Ark.; Murray, Iowa; Havensville, La Harpe, Leavenworth, Lebo, and Yates Centre, Kans.; Saint Charles, Minn.; Booneville and Water Valley, Miss.; Carrollton, Dadeville, Eight Mile, and Lebanon, Mo.; Albert, N. Mex.; Oklahoma City, Okla. T.; Hartland, Vt. 23d, Forrest City, Lonoke, and Newport, Ark.; Cairo, Ill.; Evansville and Mount Vernon, Ind.; Bowling Green and Pellville, Ky.; Pontotoc and University, Miss.; Gordonville and Marble Hill, Mo.; Nashville, Tenn.; Big Stone Gap, Va.; Koepenick, Wis. 24th, Falmouth, Ky.; Bakersville, N. C.; Circleville, Ohio. 25th, Baraboo, Wis. 26th, New Hartford and Southington, Conn.; Mason City, Iowa; Portland, Me.; Amherst and Vineyard Haven, Mass.; Antrim, Concord, and Manchester, N. H.; Bluefield, W. Va. 27th, Peoria, Ill.; Cornish, Me.; Lunenburgh, Vt.

28th, Caddo, Ky.; Barren Creek Springs, Md.; Beverly, N. J.; New York, N. Y.; Southern Pines, N. C.; Philadelphia, Pa.; Enosburgh Falls, Vt.; Clarksville and Spottsville, Va. 29th, Augusta and Point Peter, Ga.; Leonardtown, Md.; Woods Holl, Mass.; Atlantic City and Egg Harbor City, N. J.; Charlotte, Fayetteville, Lexington, Louisburgh, Lumberton, Morganton, Mount Airy, Oak Ridge, Raleigh, Salisbury, Saxon, Soapstone Mount, Wadeville, Wadesborough, Weldon, Wilmington, and Willeyton, N. C.; Belmont, Charleston, Columbia, Effingham, Saint Matthews, Simpsonville, and States-

burgh, S. C.; Rogersville, Tenn.; Cape Henry, Christiansburgh, Bedford City, Birdsnest, Cape Charles, Dale Enterprise, Staunton, Lexington, Mossing Ford, Petersburgh, Stanardsville, Richmond, Salem, Danville, Fort Monroe, Lynchburgh, and Norfolk, Va.; Grafton, W. Va. 30th, Athens, Ga.; Chapel Hill, Hatteras, Kitty Hawk, and Lillington, N. C.; Cheraw, S. C.

At Hatteras, N. C., the snow of the 30th was one day earlier, at Louisville, Ky., the snow of the 3d was 3 days earlier, and at Olympia, Wash., the snow of the 16th was more than one month earlier than the date of earliest snow previously reported for the respective stations. Prior to the current year the date of the first snow was December 1, 1876, at Hatteras, N. C.; November 6, 1886, at Louisville, Ky.; and December 20, 1889, at Olympia, Wash.

The snow of the 5th at Baltimore, Md., and Washington, D. C., was 10 and 20 days, respectively, earlier than usual; that of the 29th at Lynchburgh and Norfolk, Va., was 9 and 21 days, respectively, early; and that of the 29th at Wilmington, N. C., and Augusta, Ga., and of the 30th at Hatteras, N. C., was more than one month early. In Arkansas the snow of the 22d was more than one month early. Along the Ohio River it was one to 4 weeks early, and at Olympia and Walla Walla, Wash., respectively, the snow of the 16th and 11th was 3 to 4 weeks early. At New York, N. Y., and Philadelphia, Pa., the snow of the 28th was about 2 weeks later than usual; in the Lake region the first snow of the season noted was generally 2 to 3 weeks late; and in the upper Mississippi and lower Missouri valleys, Kansas, Nebraska, and northern New Mexico the first snow of the season reported for the current month was one to 2 weeks later than the average date of first snow.

On the 8th a snowfall of 4 feet was reported near the base of the Sierra Capitan Mountains east of Fort Stanton, N. Mex. On the 10th and 11th a general snowstorm prevailed over the Dakotas and extended into Iowa on the 11th. An unusually heavy November snowstorm prevailed over Minnesota and a part of the Dakotas on the 15th, a depth of 5.0 to 7.0 being noted. Heavy snow fell in southern Iowa and western Missouri on the 22d; trains in the Missouri Valley were delayed. Light snow fell in the northern part of Mississippi on the 23d, 28th, and 29th; in each instance the ground was barely covered, and the snow melted rapidly. The first heavy snow of the season fell in northern western New York on the 27th; a depth of 3.0 was reported at Lockport, Niagara county, at midnight of that date. A snowstorm prevailed over the Atlantic coast states and extended as far south as central South Carolina and northern Georgia on the 29th. In central and northern North Carolina the depth of snowfall on this date exceeded 6.0. The snow was exceptionally heavy throughout Virginia. At Norfolk, Va., 6.7 fell, and street traffic was interrupted, and a depth of more than one foot was reported in the south-central part of the state. Snow fell to a depth of 5.0 to 6.0 in eastern Maryland. This snowstorm was followed on the 30th by the coldest weather of the month in the Atlantic coast states. A report of the 30th stated that at the close of the month there was a depth of 1 to 3 feet of snow near Deadwood, S. Dak., and that in some localities snow had caused an entire suspension of business.

MONTHLY SNOWFALL.

The depth of snowfall for the month, as reported by regular and voluntary observers of the Weather Bureau, is shown on Chart V. The greatest depth reported was 67 at Climax, Colo.; more than 30 was noted in extreme northern upper Michigan; more than 20 in northeast southern Idaho; and more than 10 in north-central and the interior of western New York, and in northeastern Ohio, south-central Pennsylvania, south-central Virginia, central North Carolina, northern Indiana, northern Wisconsin, west-central Minnesota, over the greater part of North Dakota, and in northern South Dakota. The southern limit of snow is shown by a line traced from central South Carolina westward to south-central New Mexico, thence to the mountains of east-central California, and thence along the Sierra Nevada and Cascade ranges of mountains to western Washington.

Snowfall of 5 inches, or more, was reported as follows, and in states and territories where the maximum depth was less than that amount the station reporting the greatest is given:

Arkansas.—Black Rock, 4. *California.*—Summit, 3. *Colorado.*—Climax, 67; Dillon, 40.2; Breckenridge, 37.2; Red Cliff, 30.1; Stamford, 20; Steamboat Springs, 19; Ward District, 15; Smoky Hill Mine, 14.5; Springfield, 14.3; Pagoda (near), 14; Twin Lakes, 12.1; Meeker and Watervale, 12; Georgetown, 11.8; Dumont, 11.6; Moraine, 11.5; Apishapa, 11; Gold Hill, 10.5; Aspen and Bennet, 9; Jefferson, 8.7; Denver, 8.5; Box Elder, Castle Rock, and Downing, 8; Fort Collins, 7.8; Cumbres, 7.5; Gaynor, 7.4†; Carson, 7.3; Magnolia, 7.2; Glen Eyrie, 7; Como (near), 6.9; Saint Cloud, 6.5; Platoro, 6.4†; Loveland, 6.2†; Fort Collins (near), 6.1†; La Porte, 6†; Middle Box Elder, 5.1; Greenhorn and Manhattan, 5. *Connecticut.*—New Hartford (1), 0.5. *District of Columbia.*—Washington, D. C., 2.5. *Georgia.*—Athens, 0.5. *Idaho.*—Henrys Lake, 25.5. *Illinois.*—Aurora (2), 8.1; Aurora (1), 8; Lanark and Oswego, 7.5; Ottawa and Rockford, 7.2; Sandwich, 7; Chicago, 6.8; Winnebago, 6.5; Sycamore, 5.7; Hennepin, 5.

Indiana.—Michigan City, 13; Angola, 10.6; Columbia City, 8. *Indian Territory.*—Woodward, 2†. *Iowa.*—Carroll, 9; Alta (1), 7; Murray, 5. *Kansas.*—Horton, 5. *Kentucky.*—Pellville, 1.7. *Maine.*—Mayfield, 4. *Maryland.*—Leonardtown, 5. *Massachusetts.*—Florida (2), 6. *Michigan.*—Bellaire, 35.4; Atlantic and Calumet, 31; Rockland, 28; Ivan, 21.9; Berrien Springs (1), 20.2; Benzonia, 18; Paw Paw, 17.5; Marquette, 17.4; Sault de Ste. Marie, 14; Weldon Creek, 12.8; Bear Lake and Colon, 12.2; Charlevoix, 12; Mottville, 11.6; Caldwell, 11; Vandalia, 10.8; Concord, 10.2; Fremont, 10; Vienna, 9.9; Bronson and Hudson, 9.5; Albion, 8.8; Hanover and Marshall, 8.7; Fairview, Fitchburgh, Grayling, Parkville, and Rawsonville, 8.5; Benton Harbor, 8.3; Grand Haven, 8.2; Fort Wayne, 8.1; Noble and Sand Beach, 8; Pulaski, 7.8; Madison, 7.6; Allegan and Manistee, 7.5; Grape, 7.2; Williamston and May, 7; Ypsilanti, 6.9; Detroit and Lansing, 6.8; Berrien Springs (2) and Cheboygan, 6.5; Eden, 6.2; Alma, Ann Arbor, Howell, Kalamazoo, and Olivet, 6; Grand Rapids, 5.8; Adrian, 5.6; Port Huron, 5.4; Birch Run, 5.1; Arbela, Birmingham, Hart, Pontiac, and Saint Ignace, 5.

Minnesota.—Crookston, 12; Farmington, 11; Fort Snelling, 9.5; Minneapolis, 8.5; Saint Paul and Saint Vincent, 8; Leech Lake, 7; Rolling Green, 6.5; Duluth, 6; Pine River, 5.8; Alexandria and Moorhead, 5.2; Kinbrae, Morris, and Redwood Falls, 5. *Mississippi.*—Pontotoc, 0.2. *Missouri.*—Oak Ridge (1 and 2) and Saint Joseph, 8; Platte River, 5.5; Pickering, 5.2. *Montana.*—Camp Poplar River, 9.4; Helena, 5.3. *Nebraska.*—Hay Springs, 7; Bassett and Springview, 6; Crete, 5.9; Gering, 5.2. *Nevada.*—Battle Mountain, 2. *New Hampshire.*—Littleton and Stratford, 5. *New Jersey.*—Cape May C. H., 4. *New Mexico.*—Folsom, 4. *New York.*—Arcade, 16.5; Turin, 15.9; Humphrey and Le Roy, 15; Constableville, 13.5; Eden Center and Sherman, 12; Number Four, 11.4; Rochester, 9.7; Malone, 8.1; Potsdam, 8; Lowville, 7.4; Lockport, 7; Buffalo, 6.9; Oswego, 6.7; Hess Road Station, 6.4; Canton and Palermo, 6. *North Carolina.*—Soapstone Mount, 10; Littleton, Weldon, and Willeyton, 6.

North Dakota.—Saint Johns, 16; Fort Buford, 12.7; Napoleon, 10.8; Bismarck, 10.4; Gallatin, 10.2; Fort Yates, 8.6; Fort Pembina, 8; Grand Forks, 7; Grand Rapids, 6.7; Power and Willow City, 6. *Ohio.*—Harbor, 19; Weymouth, 10; Garrettsville, 9; Hiram, 8.7; Montpelier, 8.5; Orangeville, 7.5; Youngstown, 7.3; Wheeler, 6.5; Wauseon, 6.4; Cleveland, 6.2; Lordstown and Van Wert, 6; Akron, 5.6; Ashland and Bangorville, 5.5; Wooster, 5.2; Toledo, 5.1; Bement and Gratiot, 5. *Oklahoma Territory.*—Oklahoma City, trace. *Ore-*

gon.—Canyon City, 7.3; Joseph, 7.2; Sparta, 5.3. *Pennsylvania.*—Blue Knob, 11; Warren, 7; Grampian Hills, 6. *Rhode Island.*—Kingston (2), trace. *South Carolina.*—Camden, Cheraw, Chester, Effingham, Evergreen, Florence, Nichols, Simpsonville, Society Hill, Tillers Ferry, and Wateree, trace. *South Dakota.*—Webster, 13.1; Aberdeen, 13; Britton and Wolsey, 9; De Smet, 8.5; Clark, 8; Forest City and Huron, 7.5; Parker, 6.5; Howard, Tindall, and Wentworth, 6; Wessington Springs, 5.7; Castlewood, 5.5; Sioux Falls, 5. *Tennessee.*—Clarksville, 2. *Texas.*—Hartley, 0.2. *Utah.*—Soldiers Summit, 6.5. *Vermont.*—Burlington, Chelsea, Enosburgh Falls, and Strafford, 4. *Virginia.*—Clarksville, 14; Spottsville, 8.5; Birdsnest, 7.8; Bedford City, 7.5; Norfolk, 6.7; Cape Charles and Mossing Ford, 6; Danville, 5. *Washington.*—Pomeroy, 1.5. *West Virginia.*—Parkersburgh, 3.7. *Wisconsin.*—Bayfield, 10.2; Osceola Mills, 9; Barron, 7.5; Shell Lake, 6.5; Hammond, 5. *Wyoming.*—Fort McKinney, 20.6; Fort Yellowstone, 13; Sundance, 11.6; Laramie (2), 10.5; Cheyenne, 8.5; Casper, 8; Lander, 7.6; Wheatland, 6; Evanston, 5.8.

DEPTH OF SNOW ON GROUND ON 15TH AND AT THE CLOSE OF THE MONTH.

Chart VI shows the depth of snow on the ground at the close of the month, as reported by regular and voluntary observers of the Weather Bureau.

On the 15th a depth of 4 to 8 was reported in the eastern part of North Dakota and the northeastern part of South Dakota; 1 to 4 was reported in western Iowa; trace to 4 in northern Nebraska; depths varying from 0.4 at Miles City to 3 at Helena, Mont.; 0.5 at Denver, Colo.; 0.4 to 2.5 in northern Wyoming; trace to 1 in central and northern Nevada; 6 at Henrys Lake, Idaho; and 1.6 at Baker City, Oregon. In the Lake region trace was noted at Buffalo, N. Y., and Detroit, Mich.; 1 to 2 in upper Michigan; and 3 to 4 in the western Lake Superior region, and in the extreme upper Mississippi valley.

On the 30th snow was generally reported on the ground in the interior of the Atlantic coast states as far south as central South Carolina, in northern, central, and western New York, in the Lake region, the north part of the Ohio Valley, in the Mississippi Valley north of the 41st parallel, generally in Minnesota and the Dakotas, and in eastern Wyoming and the mountains of Colorado. In parts of North Carolina and Virginia a depth of 5 to 8 was reported; in northern New England and northern and western New York, 3 to 6; in lower Michigan, 5 to 7; in upper Michigan, 3 to 4; in Minnesota and the Dakotas, trace to 9; and in eastern Wyoming and the mountains of Colorado, trace to 5.

HAIL.

Description of the more severe hailstorms of the month is given under "Local storms." Hail was reported as follows: 1st, North Carolina. 4th, Indiana and Ohio. 6th, Indiana, North Dakota, Oregon, and Washington. 7th, Arkansas, Iowa, Michigan, Missouri, and Ohio. 8th, Arkansas, Illinois, Indiana, and Texas. 9th, Arkansas. 12th, New York. 13th, New York and West Virginia. 14th, Illinois, Kansas, and Missouri. 15th, Arkansas, Kansas, New York, and Washington. 16th, Arkansas, Illinois, and Texas. 17th, Arkansas, Indiana, New Hampshire, New York, and Pennsylvania. 18th, Missouri. 19th, Kansas and Texas. 20th, Kansas. 21st, Missouri and Texas. 22d, Illinois, Kentucky, and Missouri. 23d, Maryland, New Mexico, New York, Ohio, Pennsylvania, Virginia, and West Virginia. 24th, Kentucky and West Virginia. 26th, Kentucky, Maryland, and Mississippi. 29th, Maryland and North Carolina. 30th, North Carolina.

SLEET.

Sleet was reported as follows: 1st, New York. 2d, Kansas, Missouri, and Nebraska. 3d, Illinois and Kentucky. 4th, Arkansas. 5th, Pennsylvania. 6th, Washington. 7th, Pennsylvania and Utah. 8th, Pennsylvania and Texas. 9th, Louisiana and Pennsylvania. 10th, Minnesota. 11th, Wisconsin. 12th, Michigan. 14th, Illinois, Kansas, Missouri, Nebraska, Ohio, and Vermont. 15th, Indian Territory, Kansas, Ohio, Pennsylvania, South Dakota, and Wyoming. 16th, Arkansas, Illinois, and Washington. 17th, Colorado, Indiana, Massachusetts, New York, Ohio, Pennsylvania, Tennessee, and Washington. 18th, Arkansas, Kansas, Louisiana, Ohio, Texas, Vermont, and West Virginia. 19th, Arkansas, Illinois, Indiana, Iowa, Louisiana, Michigan, Mississippi, and Missouri. 20th, Ohio. 21st, Kansas and Missouri. 22d, Arkansas, Kansas, Missouri, and Vermont. 23d, Arkansas, Missouri, Ohio, and Pennsylvania. 24th, Nebraska. 25th, Arkansas and Ohio. 26th, Arkansas, Ohio, Pennsylvania, and South Dakota. 27th, Colorado, Maine, Ohio, and South Dakota. 28th, Maine, Mississippi, and Vermont. 29th, North Carolina and Virginia.

WINDS.

The prevailing winds in November, 1891, are shown on Chart II by arrows flying with the wind. In New England and the middle Atlantic states, over the southern plateau region, and on the middle Pacific coast west to northwest winds were most frequently noted; in the south Atlantic states and over the Florida Peninsula they were generally from northwest to northeast; in the east Gulf states, from north to northeast; in the west Gulf states, the Rio Grande Valley, the Ohio Valley and Tennessee, and over the northern plateau region, from southeast to south; in the lower lake region and on the north Pacific coast, from southeast to southwest; in the upper lake region, the upper Mississippi valley, on the southeast slope of the Rocky Mountains, and over the middle plateau region, from southwest to northwest; in the extreme northwest, the lower Missouri valley, on the middle-eastern slope of the Rocky Mountains, and along the south Pacific coast, from west to northwest; and on the southeast slope of the Rocky Mountains, variable.

HIGH WINDS.

[In miles per hour.]

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 2d, 61, se., at Fort Canby, Wash. 3d, 62, s., at Fort Canby, Wash. 4th, 63, s., at Fort Canby, Wash.; 50, s., at Tatoosh Island, Wash. 5th, 50, s., at Fort Canby, Wash. 6th, 54, w., at Fort Canby, Wash. 7th, 63, ne., at Block Island, R. I.; 60, ne., at Block Island, R. I.; 54, ne., at Nantucket, Mass. 8th, 50, w., at Fort Canby, Wash. 10th, 60, nw., at Fort Assinaboine, Mont.; 50, nw., at Bismarck, N. Dak. 11th, 66, e., at Tatoosh Island, Wash.; 52, nw., at Valentine, Nebr. 17th, 54, sw., at Buffalo, N. Y. 18th, 52, nw., at Kitty Hawk, N. C.; 50, sw., at Dodge City, Kans. 19th, 51, s., at Chicago, Ill. 20th, 50, w., at Fort Canby, Wash. 21st, 60, nw., at Pueblo, Colo.; 50, nw., at Denver, Colo. 23d, 60, sw., at Buffalo, N. Y.; 60, sw., at Lexington, Ky.; 54, se., at Harrisburg, Pa.; 54, sw., at Washington, D. C.; 54, w., at Erie, Pa. 24th, 66, sw., at Buffalo, N. Y. 26th, 50, sw., at Chicago, Ill. 29th, 60, s., at Fort Canby, Wash.; 53, ne., at Kitty Hawk, N. C.; 50, n., at Hatteras, N. C.

LOCAL STORMS.

High wind and heavy rain prevailed on the Washington coast during the first decade of the month. Heavy rain fell over the Puget Sound watershed until the 9th; heavy snow in the mountains was melted; streams overflowed their banks, flooding bottom lands and causing considerable damage to railroad and private property. On the 3d the British ship

"Strathblane" was wrecked 12 miles north of Fort Canby, Wash., and the captain and 5 of the crew were drowned. The Nova Scotia bark "Sarah" was wrecked on the Vancouver shore about 20 miles northeast of Tatoosh Island, Wash., on the 8th.

6th.—A thunderstorm from the southwest began at Tatoosh Island, Wash., at 2.52 p. m., with high southwest wind and heavy hail.

7th.—At Dubuque, Iowa, a heavy thunderstorm, with rain and large hail, began during the early morning and continued at intervals until 5 a. m.; and during a thunder and rain storm which began 1 p. m. a building was struck by lightning.

8th.—At Louisville, Ky., a heavy thunderstorm occurred between 5 and 6 a. m. Lightning struck the Board of Trade building, and the Western Union Telegraph office on the 4th floor was destroyed by fire. Lightning also caused damage in the surrounding country.

9th.—During a high southwest wind at Helena, Mont., an extreme velocity of 60 miles per hour was reached. The wind caused a telephone wire to come in contact with the trolley wire of the electric street railway, and a number of telephones were burned out and the switchboard at the central office was injured. At Pensacola, Fla., the wind reached a velocity of 41 miles per hour from the northwest at 11.05 p. m. The four-masted schooner "Maud McLean" was abandoned in a sinking condition about 90 miles west by south from Pensacola.

10th.—At Bluefield, W. Va., a brick building in course of erection was blown down during a heavy windstorm. At Blue Knob, Pa., a gale, with wind 35 to 45 miles per hour, and heavy clouds scudding toward the northwest, began at noon. At 6 p. m. the wind veered from east to southeast and reached 50 to 60 miles per hour, in squalls, prostrating trees, etc. The storm continued until midnight. At Detroit, Mich., a severe rainstorm prevailed, with southwest wind reaching a velocity of 45 miles per hour at 11 p. m.

11th.—At Ithaca, N. Y., a heavy rainstorm, with high south wind, began 2 a. m. and ended 7 a. m., causing minor damage to roofs and chimneys. At Detroit, Mich., a gale prevailed throughout the day. Many casualties were reported on the Lakes, and 13 vessels were reported disabled. At Alpena, Mich., the wind reached a velocity of 35 miles per hour at 7.30 a. m. At Pierre, S. Dak., a windstorm, with light, dry snow, continued during the morning. At Grand Rapids, N. Dak., a wind and snow storm began 11 a. m., and continued 4 hours; the storm was followed by a severe cold spell. At Valentine, Nebr., high northwest winds, reaching a velocity of 52 miles per hour, prevailed; trees were blown down, and a number of houses were unroofed.

16-17th.—At Cleveland, Ohio, high southeast to southwest winds, with rain at intervals, prevailed during the 16th. The rain changed to snow 7.38 a. m., 17th, and the storm continued during that date. At Detroit, Mich., a gale, reaching a velocity of 39 miles per hour, prevailed during the 16th. The rain changed to snow 12.20 a. m., 17th, and the snow ended 7.25 a. m. The snow began again at 10.05 a. m., and continued at intervals until 6.30 p. m. On this date the wind reached a velocity of 48 miles per hour, and many disasters were reported on the Lakes.

17th.—The Bulletin of the New England Meteorological Society states that a short-lived tornado occurred at Monroe, Mass., in the afternoon; that it passed north-northeast, prostrating a heavy growth of timber, and cutting a track about 8 rods in width and 40 rods in length; and that some of the trees were broken off and others torn up by the roots. At Portland, Me., a severe windstorm, with light rain, prevailed during the day. A storm from the northwest damaged property at Groveton, N. H. The roof of a lumber shed was blown off, killing one man and injuring another. At Brattleborough, Vt., a wind velocity of 78 miles per hour was reported. At Blue Hill, Mass., the wind reached a velocity of 59 miles per hour. At Boston, Mass., a windstorm began in the early morning, and increased in force from 2 to 4 p. m., reaching a velocity of 48 miles per hour from the southwest. Rain fell during the day, changed to sleet in the evening, and the sleet continued until 8.30 p. m. At New Haven, Conn., rain, with high south winds reaching a velocity of 39 miles per hour, continued during the day. Minor damage was caused to buildings and trees, seaside property was injured, and a sloop and several smaller boats were wrecked at Oyster Point. At New London, Conn., high wind, with rain at intervals, prevailed, and the sea was very rough in the harbor and on the Sound. Summer cottages at Eastern Point were injured; bridges were carried away and docks damaged; waves washed over the railroad track at Niantic; and a three-masted schooner went ashore on Fishers Island. At Philadelphia, Pa., light rain fell at intervals, with high south winds changing to southwest at 11 a. m., and to northwest at 1.30 p. m., with a maximum velocity of 40 miles per hour. With the change of wind the barometer, which had been falling all day, began to rise rapidly, and the temperature fell 17° in one hour. Minor damage was caused by a windstorm at Darlington, Md. A violent wind and rain storm was reported at Hagerstown, Md.

At Buffalo, N. Y., rain fell in the morning and snow in the afternoon. A gale from the southwest began 11.55 p. m., and reached a velocity of 54 miles per hour, causing minor damage. The water in the lake rose 4 feet during the gale, and a number of boats which attempted to leave were compelled to seek shelter behind the breakwater. The storm was reported the heaviest of the season at Grand Haven, Mich.; high westerly wind, with heavy squalls of snow, prevailed; business was interfered with, and vessels could not cross the bar owing to the heavy sea. At Manistee, Mich., high northwest wind, with snow, at intervals, prevailed. The schooner "Hattie Estelle" was wrecked north of the north pier. The vessel and cargo were a total loss; 3 of the crew perished, and 4 were rescued by the Life Saving Service.

19th.—At Grand Haven, Mich., southerly winds attained a velocity of 36 miles per hour. A heavy gale and high seas prevailed on the Lake and no vessels left port. A heavy southwest gale prevailed over Lake Huron and Saginaw Bay.

21st.—At Detroit, Mich., a severe gale, with rain, prevailed, the wind reaching a velocity of 48 miles per hour from the southwest at 4.12 p. m. The gale was very severe on the Lakes and many disasters were reported. The crew of the schooner "Finney" was drowned. At Wichita, Kans., the wind reached a velocity of 47 miles per hour from the north. High winds caused minor damage in eastern Colorado.

22d.—At Soapstone Mount, N. C., a rainstorm from the south, with wind reaching 40 miles per hour, caused damage to buildings, etc. A severe windstorm caused damage in central and eastern Mississippi. At Vicksburg, Miss., a thunderstorm began 2 p. m., and lasted 20 minutes, with west wind, reaching a velocity of 42 miles per hour, and a temperature fall of 26°. A report from Lawrence, Miss., stated that a storm struck that place about 3 p. m., destroying several buildings and killing a child.

23d.—The following reports, taken on 75th meridian time, show the time of occurrence and the general character of the storms which attended low area X: At Charlotte, N. C., rain ended 7.20 a. m. At 6 a. m. a brisk southwest wind began and increased to a gale, with maximum velocity 48 miles per hour, and continued until late in the afternoon, without causing serious damage. At Raleigh N. C., rain began during the early morning. From 8 a. m., 22d, to 8 a. m., 23d, the barometer fell .40 inch. A gale began 10.15 a. m. and ended 2.05 p. m. A violent squall at 10.30 a. m. blew down a tree, fatally injuring 2 children. Considerable damage was caused by wind at Saxon, N. C. At High Point, N. C., a heavy rainstorm advanced from the southwest at 9 a. m. At Lynchburgh, Va., rain fell at intervals until 10 a. m., and high southeast to southwest winds continued during the morning, causing minor damage. A storm from the southwest struck Staunton, Va., at 10.20 a. m., damaging property to the value of about $1,000. Heavy wind

and rain storms, attended in instances by hail, visited the several sections of Virginia. A severe windstorm, with rain, was general throughout West Virginia. At Buckhannon a large tannery in course of construction was blown down. At Kingwood glass was broken by hail. At Tannery a severe thunderstorm from the southwest, with high wind, prostrated buildings and trees. A storm visited Martinsburgh at 12.15 p. m. At Parkersburgh the wind reached a velocity of 30 miles per hour from the west, with heavy rain and snow; an old house was blown down, and trees were damaged.

A violent wind and rain storm, with some thunder and lightning, struck Washington, D. C., at 12.33 p. m. The wind reached a velocity of 54 miles per hour, with an extreme velocity of 60 miles for 3 minutes, the temperature fell 14°, and 0.35 inch of rain fell in 5 minutes. A large unfinished building collapsed, crushing parts of adjacent buildings, in one of which one man was killed and 2 girls were injured. A number of buildings were unroofed, and damage of a minor character was caused in and about the city. The pressure fluctuations which attended the passage of this storm are shown by a copy of the barograph record at the Weather Bureau office in Washington which appears in the description of low area X. The storm appeared as a long roll or mass of dark clouds which advanced rapidly from the southwest, following closely the shift of wind to that quarter. During the brief period of the storm's continuance the wind gusts were exceptionally violent and the rainfall remarkably heavy, and its passage was followed by rapidly clearing weather and warm sunshine.

At Baltimore, Md., a windstorm, with light rain and thunder, prevailed from noon to 2 p. m., a maximum velocity of 48 miles per hour from the south being reached at 1.15 p. m. Considerable damage was caused by wind in and about the city and throughout Maryland. At Frederick a violent storm of wind and rain, with thunder and lightning, advanced from the south about noon, unroofing and blowing down a number of buildings. At Frostburgh a storm of wind, heavy rain, hail, and thunder and lightning moved north of east at 11.10 a. m., damaging property to the estimated value of $35,000. About $2,000 damage was reported at Jefferson. Considerable damage to buildings was reported in Montgomery, Charles, and Carroll counties, Md. At New Market the storm was attended by hail, and continued 15 minutes from about 12.15 p. m. The storm struck Middletown at 12.30 p. m., from the southwest, causing damage to the extent of about $1,500. At Cumberland a severe rainstorm, with heavy gusts of wind from the south veering to southwest, began about 11 a. m. At 11.15 a. m. there were several claps of thunder.

The storm was violent throughout Pennsylvania. Strong southerly winds prevailed, and in many sections thunder, lightning, and hail were reported. The storm attained destructive violence for short periods only, and in many places lasted but a few minutes. At Harrisburg a severe gale from the south, with a maximum velocity of 54 miles per hour, sharp flashes of lightning, heavy peals of thunder, and heavy dashes of rain, began about 1.40 p. m., lasted 7 minutes, and caused a great amount of damage to buildings. A destructive wind and rain storm, with thunder and lightning, entered the southwest part of York county, Pennsylvania. At York, that county, the storm was most severe about 11 a. m., and continued until 4 p. m.; it recommenced in the evening, and subsided about midnight. At Blue Knob a heavy thunderstorm, with hail and sleet, and wind reaching a velocity of 60 miles per hour from the southwest, began at 11.30 a. m. Snow began at 8 p. m., and the wind continued heavy. At Philadelphia the wind shifted to northwest, with a heavy shower of rain at 4.30 p. m. The wind continued high about 20 minutes. At Hanover a storm from the southwest, with heavy rain, thunder, and lightning, occurred about 1 p. m., demolishing a large brick building, and killing one person.

A storm from the southwest struck Carlisle about 1.30 p. m., blowing down a schoolhouse, and injuring a number of persons. A severe thunder and rain storm, with small hail, moved eastward over Lock Haven about 12.30 p. m. A heavy rain and wind storm visited Blooming Grove about 3 p. m. A very heavy rainstorm, with strong gusts of wind, occurred at Dyberry at 3.45 p. m. A rainstorm, with high southwest wind, visited Tioga county, Pa., at 1.40 p. m., and lasted about 20 minutes, killing one person, and causing much damage to buildings. At Pittsburg the barometer fell rapidly until 10 a. m., when it reached 29.08, the lowest reading on record at the Weather Bureau station at that place, except a reading of 29.01 on January 27, 1889. At 10 a. m. the wind reached a velocity of 30 miles per hour from the southwest, and 0.49 inch of rain fell in 10 minutes. Much damage was done in and about the city, telegraphic communication was seriously interrupted, and railroad traffic was delayed. The storm was one of the severest ever experienced at Erie. The barometer fell to 28.92 at noon, rain, snow, and sleet fell, and the wind reached a velocity of 51 miles per hour from the southwest at 8.55 p. m., causing much damage to buildings and shipping.

The storm was very severe over western New York. At Buffalo a gale began at 1.08 p. m., with maximum velocity 60 miles per hour, and continued during the 24th, on which date a velocity of 66 miles per hour was recorded. The storm was the most severe of the season, and caused considerable damage in that section. At Oswego a gale began at 11.27 a. m. and ended 3.51 p. m., reaching a velocity of 40 miles per hour. A second gale began 9.45 p. m. and ended 11.24 p. m. The fall of the barometer was very rapid, and at 3.35 p. m. it reached 29.04. A heavy south wind struck Addison at 2 p. m., and 0.30 inch of rain fell in 5 minutes. A strong gale was reported at Alfred Centre at 3 p. m. At South Canisteo heavy southwest wind damaged buildings, and 0.25 inch of rain fell from 1.50 to 1.53 p. m. At Wedgwood the wind veered from southeast to southwest at 2.15 p. m., with heavy rain, thunder, and a dash of hail. The gale lasted 12 minutes, and the rain ceased at 3 p. m.

At New York City the wind reached a velocity of 48 miles per hour from the southeast at 4.10 p. m., and the weather was very severe over the rivers, Sound, and Bay. At Cleveland, Ohio, the barometer fell rapidly during the early part of the day, and at 12.30 p. m. it read 28.14 (actual), the lowest reading on record at that station. Rain began at 1.15 a. m., accompanied by high southeast backing to northeast and northwest winds. No serious damage was reported. At Ashville, Ohio, a violent hailstorm was reported in the early morning, followed by rain until 9.30 a. m., when the rain changed to snow, and the wind reached a velocity of about 50 miles per hour by 2 p. m. Heavy wind and snow storms were reported throughout northern Ohio.

26th.—At Alpena, Mich., a gale began 9.30 a. m., lasted 2 hours, and attained a velocity of 30 miles per hour from the south. About 2 p. m. a steambarge and 3 consort barges were swamped while crossing Saginaw Bay.

29th.—At Cape Henry, Va., the wind reached a velocity of 50 miles per hour from the northwest at 9.37 a. m. Snow, with sleet, fell to the depth of 3 inches. High winds prevailed along the North Carolina and Virginia coasts. A report from Alpena, Mich., stated that 2 barges ran ashore near Presque Isle during a snowstorm.

VERIFICATION OF WIND SIGNALS FOR OCTOBER, 1891.

Statement showing percentages of justifications of wind signals for the month of October, 1891.

Wind signals—(Ordered by Professor H. A. Hazen.)—Total number of signals ordered, 165; justified as to velocity, wholly, 108, partly, 11; justified as to direction, 155. Of the signals ordered, 131 were cautionary, of which 82 were wholly, and 7 partly, justified; and 34 storm signals were ordered, of which 26 were wholly, and 4 partly, justified; 69 signals were ordered for easterly winds, of which 59 were justified, and 96 were ordered for westerly winds, all of which were justified. Number of winds without signals, 27. Number of signals ordered late, 24. Percentage of justifications, 69.9.

VERIFICATION OF COLD-WAVE SIGNALS FOR OCTOBER, 1891.

Cold-ware signals.—(Ordered by Prof. H. A. Hazen.)—Twenty cold-wave signals were ordered during October, 1891, 8 of which were justified. Percentage of justifications, 40.

INLAND NAVIGATION.

ICE IN RIVERS AND HARBORS.

Hudson River.—The first ice of the season formed at Albany, N. Y., on the 30th.

Detroit River.—Large quantities of floating ice were reported at Detroit on the 30th.

Grand River.—The river was frozen at Lansing, Mich., on the 29th.

Black River.—At Port Huron, Mich., thin floating ice was reported on the 19th; floating ice on the 28th; on the 29th the river was covered with very thin ice; floating ice on the 30th.

Fox River.—Ice 7 inches in thickness was reported at Appleton, Wis., on the 30th.

Wisconsin River.—The river was frozen on the 18th.

Manitowoc River.—At Manitowoc, Wis., the river was closed on the 18th; it was open on the 21st, and again closed on the 25th.

Red River of the North.—At Saint Vincent, Minn., persons were crossing the river on the ice on the 17th, and on the 19th teams were crossing.

Mississippi River.—At Saint Paul, Minn., the river was gorged with ice and frozen from the Robert street bridge as far up as could be seen on the 19th; below the bridge the river was open. On the 27th the river was gorged with ice, except at the foot of Jackson street. At Red Wing, Minn., the first ice of the season appeared on the 17th; on the 18th the river was frozen over, and the ferry boats had stopped running; on the 20th the ice was broken up and ferry boats resumed their trips; on the 24th the river was frozen during the night, but the ice was broken by the current and high wind; on the 25th the river was again frozen over. At La Crosse, Wis., floating ice was reported on the 17th; on the 18th the river was gorged with ice above the town; on the 21st the river in front of town was clear of ice; on the 27th the river was closed by ice. At Dubuque, Iowa, the river was full of ice above the bridge on the 24th; on the 28th the river was frozen over. At Le Claire, Iowa, the river was frozen on the 18th; on the 21st the ice was breaking up; the morning of the 25th the river was frozen, but the ice broke up in the afternoon; on the 29th the river was frozen. At Davenport, Iowa, the river was frozen on both shores and was full of floating ice on the 17th; river full of floating ice on the 18th and 20th; continued full of floating ice until the 29th, when it froze over, and on the 30th persons were crossing on the ice. The river was frozen at Muscatine, Iowa, on the 16th. Floating ice was reported at Warsaw, Ill., on the 29th, and at Alton, Ill., on the 30th.

Illinois River.—At Ottawa, Ill., the river was frozen on the 19th; on the 20th the ice ran out, and on the 28th the river was frozen.

Missouri River.—At Fort Buford, N. Dak., the river was frozen on the 14th. At Pierre, S. Dak., ice was running in the river, with solid shore ice, at 1 a. m., 12th, and at 9 a. m. the shore ice was strong enough to bear the weight of a man, and traffic was suspended above the pontoon bridge; on the 13th ice was running in the river, the shore ice was extending, and the pontoon bridge was closed to traffic; on the 14th ice was running, and an ice gorge had formed north of the end of the pontoon bridge; on the 15th the east side of the channel was frozen over, and ferry boats were tied up for the season; on the 24th persons were crossing on the ice above the pontoon bridge. At Sioux City, Iowa, ice was running in large quantities from the 13th to 15th, and on the 25th the river was frozen over, closing navigation. At Saint Joseph, Mo., ice was running in the river on the 17th; on the 18th the river was blocked with ice; on the 28th it was clear of ice; and on the 30th running ice was noted. At Leavenworth, Kans., the river was full of floating ice on the 17th, and the ice was sufficiently heavy to break the pontoon bridge; the river was full of floating ice on the 18th and 19th.

On the 30th ice in the canals of New York interfered with navigation. A report from Albany, N. Y., stated that all canals, except the Erie, were to be closed for the season at midnight.

CLOSING OF NAVIGATION.

Navigation closed at Green Bay, Wis., on the 30th. Navigation closed on the Fox River, Wis., on the 25th. Navigation closed on the Mississippi River at Dubuque, Iowa, on the 15th. Navigation closed on the Missouri River at Sioux City, Iowa, on the 25th.

LOW WATER.

Navigation on the Ohio River, which had been suspended on account of low water between Pittsburg, Pa., and Cincinnati, Ohio, from September 14th, and between Pittsburg, Pa., and Wheeling, W. Va., from September 24th, was resumed on the 23d. A report of the 18th stated that the Red River was exceptionally low at Shreveport, La., and that boats were unable to run. The Detroit and Saint Clair rivers were very low on the 17th. At Chattanooga, Tenn., the Tennessee River rose after the 14th, and boats resumed their trips by the 25th.

FLOODS.

Heavy rain during the first decade of the month caused destructive floods in the streams of northwestern Washington. Railroads were washed out, telegraphic communication was interrupted, and bridges were carried away.

STAGE OF WATER IN RIVERS.

In the following table are shown the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, November, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	1	—0.7	15–17, 19, 20	—1.7	1.0
Arkansas River.						
Fort Smith, Ark	22.0	13	3.7	8, 9	1.0	2.7
Little Rock, Ark	23.0	24	7.2	11, 12, 13	2.7	4.5
Missouri River.						
Fort Buford, N. Dak *	.....	.....	.....	.....	.....	.....
Sioux City, Iowa	.....	.....	.....	.....	.....	.....
Kansas City, Mo	21.0	2	6.4	24, 25	3.7	2.7
Mississippi River.						
Saint Paul, Minn	14.0	1	1.3	18	0.1	1.2
La Crosse, Wis †	11.8	21, 22	2.2	10–17	0.5	1.7
Dubuque, Iowa	16.0	1, 2, 8, 9	1.9	26	1.1	0.8
Davenport, Iowa	15.0	1	1.1	28	—0.3	1.3
Keokuk, Iowa	14.0	1	0.7	29	—1.2	1.9
Saint Louis, Mo	30.0	25	5.9	30	4.0	1.9
Cairo, Ill	40.0	30	15.0	6, 7	2.4	12.6
Memphis, Tenn	33.0	30	8.3	8, 9	1.0	7.3
Vicksburg, Miss	41.0	30	3.9	16, 17, 18	— 2.5	6.4
New Orleans, La	13.0	9	3.9	15, 16	2.2	1.7
Ohio River.						
Parkersburgh, W. Va	38.0	26, 27	14.6	10, 11	2.7	11.9
Cincinnati, Ohio	45.0	29	24.6	2	4.5	20.1
Louisville, Ky	24.0	30	10.3	1, 2, 3	3.0	7.3
Cumberland River.						
Nashville, Tenn	40.0	23	11.3	2-9	0.0	11.3
Tennessee River.						
Chattanooga, Tenn	33.0	26	6.7	4-10	1.2	5.5
Monongahela River.						
Pittsburg, Pa	29.0	25	13.0	7	5.7	7.3
Savannah River.						
Augusta, Ga	32.0	25	15.8	2, 8	5.5	10.3
Willamette River.						
Portland, Oregon	15.0	5	5.3	1, 2	2.8	2.5
Susquehanna River.						
Harrisburg, Pa	17.0	26	6.5	9, 10, 11	2.0	4.5
Alabama River.						
Montgomery, Ala	48.0	30	3.5	1-3	— 0.3	3.8

*Record incomplete. † For 24 days.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 6th, Eastport and Orono, Me.; Cambridge, Mass.; Pine River, Minn.; Fort Assinaboine, Mont.; Turin, N. Y.; Webster, S. Dak. 7th, Orono, Me. 14th, Philo, Ill.; in Ohio. 16th, Philo, Ill.; East Machias, Me. 18th, Saint Vincent, Minn.; East Sound, Wash. 19th, East Machias and Orono, Me.; East Sound, Wash. 22d, Morgantown, W. Va. 25th, Corner Stone, Ark. 28th, Woodbridge, N. Dak. 29th, Angola, Ind. 30th, in Colorado.

THUNDERSTORMS.

Description of the more severe thunderstorms reported for the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 13, on the 8th; in 12 on the 22d and 23d; in 10 on the 7th and 8th; in 9 on the 16th; in 8 on the 6th; in 7 on the 21st; in 6 on the 28th; in 5 on the 9th, 15th, 17th, and 20th; in 4 on the 10th, 12th, and 26th; in 3 on the 3d, 5th, and 27th; in 2 on the 11th, 13th, and 14th; and in 1 on the 1st, 2d, and 29th. No thunderstorms were reported on the 18th, 19th, 24th, and 30th.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 13, in Kansas; on 12 in Arkansas and Missouri; on 10 in Mississippi; on 8 in Louisiana; on 7 in Tennessee; on 6 in Illinois and Texas; on 5 in Indiana, Iowa, and Kentucky; on 4 in New York, Ohio, and Pennsylvania; on 3 in Alabama and Wisconsin; on 2 in Florida, Georgia, Michigan, Nebraska, and South Carolina; and on 1 in Connecticut, District of Columbia, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, North Carolina, Virginia, and West Virginia.

West of the Rocky Mountains thunderstorms were reported in California on the 30th; in Colorado on the 7th; in Oregon on the 6th; in Washington on the 6th and 29th; and in Wyoming on the 30th. In states and territories other than those named no thunderstorms were reported.

MISCELLANEOUS PHENOMENA.

DROUGHT.

Drought continued in New Hampshire; wells were failing; streams were very low; and many mills and factories were compelled to suspend operations. On the 16th and 17th rain fell in the Croton Lake watershed, averting a water famine in New York City. At the close of the month the drought was becoming very severe in the interior of South Carolina. In parts of the Gulf States, Tennessee, and Kentucky the drought was broken by rains of the 8th to 10th. At New Orleans, La., it was broken on the 18th. At El Paso, Tex., trace, only, of rainfall occurred, and the month was the driest November since 1879. Drought continued in Arizona, and in some localities cattle were perishing. In parts of Indian Territory water was scarce on the ranges, and wells were failing. In Arkansas the drought was broken on the 1st. The month was very dry in parts of western Missouri. At Dubuque, Iowa, the drought was broken on the 7th. The early part of the month was dry in southern Illinois and southern Indiana. Drought was reported throughout the month in parts of east-central and northwestern Wisconsin. The month was very dry in sections of southern Kansas.

PRAIRIE AND FOREST FIRES.

Prairie fires were reported east and northwest of Fort Assinaboine, Mont., on the 7th. Destructive prairie fires were reported in various sections of southern and western Kansas in the early part of the month. Extensive prairie fires occurred in Oklahoma and Indian territories the latter part of the month.

Forest fires occurred between Wilton and New Canaan, Fairfield county, Conn., the early part of the month. They were also reported in Rockland and Wright counties, N. Y., in Lamar and Coosa counties, Ala., near Chattanooga, Tenn., and in Carter county, Ky., during the first decade of the month.

STATE WEATHER SERVICES.

[*Temperature in degrees Fahrenheit; precipitation, including melted snow, in inches and hundredths.*]

The following extracts and summaries are republished from reports for November, 1891, of the directors of the various state weather services:

ALABAMA.

Temperature.—The mean was about normal; maximum, 90, at Brewton, 6th; minimum, 12, at Auburn, 30th; greatest monthly range, 71, at Florence; least monthly range, 32, at Chepultepec.

Precipitation.—The average was 1.22 below the normal; greatest monthly, 9.30, at Brewton; least monthly, 2.48, at Oxanna.

Wind.—Prevailing direction, northwest—*P. H. Mell, Observer, Weather Bureau, Auburn, director.*

ARIZONA.

Temperature.—Maximum, 98, at Arizona Canal Company's Dam, 4th; minimum, 11, at Holbrook, 4th; greatest monthly range, 63, at Arizona Canal Company's Dam and Phœnix; least monthly range, 30, at Eagle Pass.

Precipitation.—Rainfall occurred at 5 stations only; greatest monthly, 0.08, at Natural Bridge.

Wind.—Prevailing direction, west.—*J. C. Hayden, Observer, Weather Bureau, Tucson, director.*

ARKANSAS.

Temperature.—The mean was 1.0 below the normal; maximum, 87, at Monticello, 6th, and at Texarkana, 9th; minimum, 10, at Black Rock, 30th, and at Harrisburgh, 29th; greatest monthly range, 69, at Keesees Ferry; least monthly range, 52, at Winslow.

Precipitation.—The average was 1.13 above the normal; greatest monthly, 10.03, at Osceola; least monthly, 0.95, at Paragould.

Wind.—Prevailing direction, north.—*M. F. Locke, Commissioner of Agriculture, Little Rock, director; F. H. Clarke, Observer, Weather Bureau, assistant.*

CALIFORNIA.

The month was unusually dry.

Temperature.—Maximum, 94, at Winchester, 5th; minimum, 18, at Jackson, 15th and 18th; greatest monthly range, 63, at Winchester; least monthly range, 32, at Berkeley.

Wind.—Prevailing direction, northwest.—*J. A. Barwick, Observer, Weather Bureau, Sacramento, director.*

COLORADO.

Temperature.—The mean was 2.2 above the normal; maximum, 84, at Lamar and Thon, 5th; minimum, —12, at Breckenridge, 20th; greatest monthly range, 93, at Crook; least monthly range, 52, at Monte Vista.

Precipitation.—The average was 0.15 below the normal; greatest monthly, 6.70, at Climax; least monthly, 0.00, at a number of stations.

Wind.—Prevailing direction, west.—*W. S. Miller, Observer, Weather Bureau, Denver, director.*

FLORIDA.

Temperature.—Maximum, 88, at Archer, 1st and 29th; minimum, 27, at Tallahassee, 30th; greatest monthly range, 54, at Tallahassee; least monthly range, 20, at Key West.

Precipitation.—Greatest monthly, 3.88, at Pensacola; least monthly, 0.70, at Archer.

Wind.—Prevailing direction, northeast.—*E. R. Demain, Observer, Weather Bureau, Jacksonville, director.*

GEORGIA.

Temperature.—The mean was from 2.0 to 3.0 below the normal; maximum, 88, at Thomasville, 3d; minimum, 17, at Marietta, 18th, and at Newnan, 30th; greatest monthly range, 61, at Elberton, Fort Gaines, Millen, and Thomasville; least monthly range, 45, at Monticello.

Precipitation.—The average was 0.75? below the normal; greatest monthly, 4.99, at Toccoa; least monthly, 0.62, at Hepzibah.

Wind.—Prevailing direction, northeast.—*Park Morrill, Observer, Weather Bureau, Atlanta, director.*

ILLINOIS.

Temperature.—The mean was 2.8 below the normal of the last 16 years; maximum, 75, at Martinsville, 15th; minimum, —11, at Oswego, 29th, and was the lowest minimum on record for November.

Precipitation.—The average was 2.22 above the normal; greatest monthly, 10.92, at Olney; least monthly, 3.61, at Martinsville.

Wind.—Prevailing direction, northwest.—*John Craig, Observer, Weather Bureau, Springfield, director.*

INDIANA.

Temperature.—Maximum, 73, at Marengo, 15th; minimum, —1, at La Fayette, 29th; greatest monthly range, 65, at La Fayette; least monthly range, 51, at Columbia City.

Precipitation.—Greatest monthly, 8.20, at Point Isabel; least monthly, 0.28, at Valparaiso.

Wind.—Prevailing direction, south.—*Prof. H. A. Huston, La Fayette, director; C. F. R. Wappenhans, Observer, Weather Bureau, assistant.*

IOWA WEATHER AND CROP SERVICE.

The month was the coldest November in the last 10 years.

Temperature.—The mean was 6.0 above the normal; maximum, 84, at Glenwood, 6th; minimum, —24, at Larrabee and Sanborn, 28th; greatest monthly range, 88, at Galva and Sanborn; least monthly range, 57, at Fort Madison.

Precipitation.—The average was 0.30 below the normal; greatest monthly, 3.64, at Maquoketa; least monthly, 0.06, at Glenwood.

Wind.—Prevailing direction, northwest.—*J. R. Sage, Des Moines, director; G. M. Chappel, Observer, Weather Bureau, assistant.*

KANSAS.

Temperature.—The mean was 1.4 below the normal; maximum, 87, at Columbus and Kellogg, 6th; minimum, —10, at McAllaster, 16th; greatest monthly range, 90, at McAllaster; least monthly range, 67, at Altoona.

Precipitation.—The average was 0.96 below the normal; greatest monthly, 2.96, at Columbus; least monthly, 0.00, at several stations in the northern part of the state.

Wind.—Prevailing direction, north.—*Prof. J. T. Lovewell, Topeka, director; T. B. Jennings, Observer, Weather Bureau, assistant.*

KENTUCKY.

Temperature.—The mean was 5.0 below the normal; maximum, 75, at Harrodsburgh, 9th, and at Earlington, 15th; minimum, 10, at Harrodsburgh, 30th, and Shelbyville, 18th; greatest monthly range, 65, at Harrodsburgh; least monthly range, 54, at Richmond.

Precipitation.—The average was 2.00 above the normal; greatest monthly, 10.01, at Central City; least monthly, 3.75, at Caddo.

Wind.—Prevailing direction, southeast.—*Frank Burke, Observer, Weather Bureau, Louisville, director.*

LOUISIANA.

Temperature.—The mean was 1.9 above the normal; maximum, 90, at Liberty Hill, 5th; minimum, 13, at Winnsborough, 29th; greatest monthly range, 74, at Winnsborough; least monthly range, 37, at Port Eads.

Precipitation.—The average was 1.12 above the normal; greatest monthly, 11.14, at Cheneyville; least monthly, 3.29, at Luling.

Wind.—Prevailing direction, southeast.—*George E. Hunt, Observer, Weather Bureau, New Orleans, director.*

MARYLAND.

Temperature.—Maximum, 75, at Mount Saint Marys, 1st; minimum, 10, at Darlington and Kirkwood, Del., 30th; greatest monthly range, 63, at Mount Saint Marys; least monthly range, 44, at Jewell and Leonardtown.

Precipitation.—Greatest monthly, 2.92, at Cumberland; least monthly, 1.33, at Baltimore.

Wind.—Prevailing direction, northwest.—*Dr. William B. Clark, Johns Hopkins University, Baltimore, director; Prof. Milton Whitney, Maryland Agricultural College, secretary and treasurer; C. P. Cronk, Observer, Weather Bureau, in charge.*

MICHIGAN.

Temperature.—The mean was 3.2 below the normal of the last 16 years; maximum, 66, at Grape, 9th; minimum, —5, at Adrian, 30th.

Precipitation.—The average was 2.20 above the normal; greatest monthly, 7.33, at Bellaire; least monthly, 2.34, at Escanaba.—*N. B. Conger, Observer, Weather Bureau, Detroit, director.*

MINNESOTA.

Temperature.—The mean averaged 5 to 7 below the normal; maximum, 70, at Mankato, 1st; minimum, —27, at Morris, 28th; greatest monthly range, 91, at Montevideo; least monthly range, 56, at Duluth.

Precipitation.—In the extreme western part of the state the precipitation was about normal, elsewhere it was deficient; greatest monthly, 1.05, at Farmington; least monthly, 0.40, at Mankato.

Wind.—Prevailing direction, northwest.—*J. H. Harmon, Observer, Weather Bureau, Minneapolis, director.*

MISSISSIPPI.

Temperature.—The mean was 0.1 below the normal; maximum, 91, at Washington, 21st; minimum, 16, at University, 30th; greatest monthly range, 71, at Vaiden; least monthly range, 49, at Bay Saint Louis.

Precipitation.—The average was 1.87 above the normal; greatest monthly, 10.30, at Natchez; least monthly, 2.42, at Waynesborough.

Wind.—Prevailing direction, north.—*R. B. Fulton, Observer, Weather Bureau, University, director.*

MONTANA.

Temperature.—Maximum, 75, at Powder River, 5th; minimum, —19, at Powder River, 12th.

Precipitation.—The average was above the normal; greatest monthly, 2.14, at Camp Poplar River; least monthly, 0.12, at Virginia City.—*E. J. Glass, Observer, Weather Bureau, Helena, director.*

NEBRASKA.

Temperature.—Maximum, 88, at Superior and Imperial, 4th; minimum, —22, at Fort Niobrara, 17th; greatest monthly range, 97, at Fort Niobrara; least monthly range, 65, at Fairfield.

Precipitation.—Greatest monthly, 1.21, at Hay Springs; least monthly, 0.00, at several stations.

Wind.—Prevailing direction, northwest.—*Prof. Goodwin D. Swezey, Crete, director; G. A. Loveland, Observer, Weather Bureau, assistant.*

NEVADA.

Temperature.—The mean was 1.0 above the normal; maximum, 81, at Eureka, 5th; minimum, —2, at Elko, 16th.

Precipitation.—The average was about 0.50 below the normal; greatest monthly, 0.72, at Lewers Ranch; no rain fell south of the 39th parallel.—*Prof. Charles W. Friend, Carson City, director; F. A. Carpenter, Observer, Weather Bureau, assistant.*

NEW ENGLAND METEOROLOGICAL SOCIETY.

Temperature.—The mean was 0.1 above the normal; maximum, 68, at Adams and Milton, 11th, at Lake Cochituate, 12th, and at Taunton (*d*) and Olneyville, 17th; minimum, —14, at Northfield, 30th; greatest monthly range, 78, at West Milan; least monthly range, 36, at Nantucket.

Precipitation.—The average was 1.36 below the normal; greatest monthly, 6.07, at Savoy; least monthly, 1.02, at Nantucket.

Wind.—Prevailing direction, northwest.—*Prof. William H. Niles, Boston, Mass., president; Prof. Winslow Upton, Providence, R. I., secretary; J. Warren Smith, Observer, Weather Bureau, assistant.*

NEW JERSEY.

Temperature.—The mean was 2.0 below the normal; maximum, 79, at Ocean City, 12th; minimum, 6, at Hanover, 30th; greatest monthly range, 68, at Ocean City; least monthly range, 46, at Atlantic City.

Precipitation.—The average was 1.03 below the normal; greatest monthly, 3.47, at Dover; least monthly, 1.54, at Elizabeth.

Wind.—Prevailing direction, northwest.—*E. W. McGann, Observer, Weather Bureau, New Brunswick, director.*

NEW MEXICO.

Temperature.—Maximum, 86, at Folsom, 3d; minimum, —10, at Coolidge, 26th; greatest monthly range, 77, at Folsom; least monthly range, 49, at Santa Fé.

Precipitation.—Greatest monthly, 0.25, at Folsom; least monthly, 0.00, at a number of stations.

Wind.—Prevailing direction, west.—*H. B. Hersey, Observer, Weather Bureau, Santa Fé, director.*

NEW YORK.

Temperature.—The mean was 0.4 above the normal; maximum, 74, at Peekskill, 6th; minimum, —9, at Number Four, 30th; greatest monthly range, 75, at Canton; least monthly range, 44, at Columbus.

Precipitation.—The average was 0.64 below the normal; greatest monthly, 7.03, at Turin; least monthly, 1.20, at Hammondsport.

Wind.—Prevailing direction, south.—*Prof. E. A. Fuertes, Dean of the College of Civil Engineering, Cornell University, Ithaca, director; R. M. Hardinge, Observer, Weather Bureau, assistant.*

NORTH CAROLINA.

Temperature.—The mean was 3.5 below the normal; maximum, 80, at Chapel Hill, 2d; minimum, 5, at Linville, 18th; greatest monthly range, 67, at Chapel Hill and Saxon; least monthly range, 39, at Hatteras.

Precipitation.—The average was 0.45 below the normal; greatest monthly, 10.79, at Linville; least monthly, 0.77, at New Berne.

Wind.—Prevailing direction, north.—*Dr. Herbert B. Battle, Raleigh, director; C. F. von Herrmann, Observer, Weather Bureau, assistant.*

NORTH DAKOTA.

Temperature.—The mean was 5.0 below the normal; maximum, 71, at Dickinson, 5th; minimum, —35, at Woodbridge, 28th; greatest monthly range, 99, at Woodbridge; least monthly range, 70, at Saint John.

Precipitation.—The average was 0.28 above the normal; greatest monthly, 1.44, at Saint John and Fort Buford; least monthly, 0.34, at Ellendale.

Wind.—Prevailing direction, northwest.—*W. H. Fallon, Observer, Weather Bureau, Bismarck, director.*

OHIO.

Temperature.—The mean was 1.0 below the normal; maximum, 76, at Portsmouth and Waverly, 10th; minimum, 0 (zero), at Montpelier, 29th; greatest monthly range, 68, at Weymouth; least monthly, range, 47, at Greenville.

Precipitation.—The average was 1.77 above the normal; greatest monthly, 7.38, at Elyria; least monthly, 1.54, at Pomeroy.

Wind.—Prevailing direction, southwest.—*Prof. B. F. Thomas, Columbus, director; C. M. Strong, Observer, Weather Bureau, secretary and assistant.*

OREGON.

An unusual number of cloudy days prevailed, and rains in the Willamette Valley interfered with plowing and seeding.

Temperature.—The mean was 2.6 above the normal; maximum, 79, at East Portland, 6th; minimum, 1, at Canyon City, 26th; greatest monthly range, 66, at Canyon City; least monthly range, 27, at Newport.

Precipitation.—The average was 1.70 above the normal; greatest monthly, 15.18, at Astoria; least monthly, 0.66, at Grass Valley.

Wind.—Prevailing direction, south.—*Hon. H. E. Hayes, Master State Grange, Portland, director; B. S. Pague, Observer, Weather Bureau, asst.*

PENNSYLVANIA.

Temperature.—The mean was 2.0 above the normal; maximum, 76, at Pittsburg, 9th; minimum, 6, at Dyberry, 30th; greatest monthly range, 66, at Ligonier; least monthly range, 36, at Selins Grove.

Precipitation.—The average was 0.87 below the normal; greatest monthly, 5.70, at Columbus; least monthly, 1.09, at Lancaster.

Wind.—Prevailing direction, northwest.—*Under direction of the Franklin Institute, Philadelphia; L. M. Dey, Observer, Weather Bureau, assistant.*

SOUTH CAROLINA.

Temperature.—Maximum, 82, at Greenville and Saint Matthews, 1st, and Evergreen, 2d; minimum, 15, at Greenville, 22d.

Precipitation.—Greatest monthly, 5.25, at Walhalla; least monthly, 0.43, at Conway.

Wind.—Prevailing direction, northeast.—*A. P. Butler, Observer, Weather Bureau, Columbia, director.*

SOUTH DAKOTA.

Temperature.—The mean was 3.7 below the normal; maximum, 82, at Forest City, 5th; minimum, —34, at Castlewood, 28th; greatest monthly range, 101, at Webster; least monthly range, 65, at Parker.

Precipitation.—The average was 0.16 below the normal; greatest monthly, 2.39, at Webster; least monthly, 0.17, at Rapid City.

Wind.—Prevailing direction, northwest.—*S. W. Glenn, Observer, Weather Bureau, Huron, director.*

TENNESSEE WEATHER CROP SERVICE.

Temperature.—The mean was 0.6 below the normal; maximum, 80, at Bolivar, 1st, and at Savannah, 16th; minimum, 10, at Hohenwald, 30th; greatest monthly range, 65, at Lynnville; least monthly range, 48, at Florence Station.

Precipitation.—The average was 1.46 above the normal; greatest monthly, 11.45, at Dyersburgh; least monthly, 1.09, at Newport.

Wind.—Prevailing direction, south.—*J. B. Marbury, Observer, Weather Bureau, Nashville, director.*

TEXAS.

Temperature.—The mean was normal; maximum, 93, at Arlington, 6th; minimum, 6, at Hansford, 17th; greatest monthly range, 80, at Arlington; least monthly range, 42, at Liberty.

Precipitation.—The average was 1.00 below the normal; greatest monthly, 4.61, at Houston; least monthly, 0.00, at Haskell.

Wind.—Prevailing direction, southeast.—*D. D. Bryan, Galveston, director; I. M. Cline, Observer, Weather Bureau, assistant.*

UTAH.

Temperature.—Maximum, 80, at Saint George; minimum, 6, at Deseret, 17th; greatest monthly range, 68, at Deseret; least monthly range, 40, at Castle Gate.

Precipitation.—Greatest monthly, 0.90, at Salt Lake City; least monthly, 0.00. at a number of stations.—*G. N. Salisbury, Observer, Weather Bureau, Salt Lake City, director.*

VIRGINIA.

Temperature.—Maximum, 79, at Richmond, 1st; minimum, 3, at Lexington, 30th; greatest monthly range, 71, at Richmond; least monthly range, 43, at Cape Charles.

Precipitation.—Greatest monthly, 3.49, at Big Stone Gap; least monthly, 1.15, at Marion.

Wind.—Prevailing direction, northwest.—*Dr. E. A. Craighill, Lynchburgh, director; J. N. Ryker, Observer, Weather Bureau, assistant.*

WASHINGTON.

Temperature.—The mean was 2.1 above the normal; maximum, 76, at Walla Walla, 4th; minimum, 2, at Baker City, Oregon, 16th.

Precipitation.—The average was 3.97 above the normal; greatest monthly, 23.06, at Neah Bay; least monthly, 0.65, at North Yakima.

Wind.—Prevailing directions, south and southwest.—*E. B. Olney, Observer, Weather Bureau, Olympia, director.*

WEST VIRGINIA.

Temperature.—Maximum, 80, at Morgantown, 8th; minimum, 8, at Pleasant Hill, 19th; greatest monthly range, 68, at Morgantown; least monthly range, 46, at Alderson.

Precipitation.—Greatest monthly, 4.35, at Glenville; least monthly, 1.11, at Kingwood.

Wind.—Prevailing direction, west.—*W. W. Dent, Observer, Weather Bureau, Parkersburgh, director.*

WISCONSIN.

Temperature.—Maximum, 68, at Kenosha, 23d; minimum, —22, at Osceola Mills, 29th; greatest monthly range, 80, at Osceola Mills; least monthly range, 46, at Bayfield.

Precipitation.—Greatest monthly, 4.51, at Kenosha; least monthly, 0.41, at Medford.

Wind.—Prevailing direction, northwest.—*W. L. Moore, Observer, Weather Bureau, Milwaukee, director.*

WYOMING.

Temperature.—Maximum, 80, at Casper, 1st, at Lander, 3d, and at Wheatland, 5th; minimum, —24, at Sheridan, 16th; greatest monthly range, 94, at Lander (voluntary observer).

Precipitation.—Greatest monthly, 1.16, at Sundance; least monthly, 0.05, at Fort Fetterman.

Wind.—Prevailing direction, west.—*E. M. Ravenscraft, Observer, Weather Bureau, Cheyenne, director.*

METEOROLOGICAL TABLES.

Meteorological record of Army post surgeons, voluntary, and other co-operating observers, November, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
Alabama.	°	°	°	*Ins.*
Bermuda *†	81	24	54.0	3.25
Bessemer	82	20	52.5	6.91
Brewton †	90	23	62.6	9.30
Carrolton	78	22	52.5	7.21
Chepultepec	60	28	41.3	3.00
Childersburgh †	.....	.....	.....	3.07
Citronelle †	81	26	58.2	5.48
Cordova †	.....	.....	.....	6.23
Daphne	89	26	61.7	4.50
Decatur (1) †	.....	.....	.....	7.23
Decatur (2) †	75	14	48.6	6.65
Double Springs †	80	18	50.8	5.18
Eufaula (2)	79	23	53.4	4.07
Evergreen †	79	24	56.3	6.12
Florence (1) †	.....	.....	.....	5.98
Alabama—Cont'd.	°	°	°	*Ins.*
Florence (2)	88	17	51.4	5.75
Fort Deposit †	82	22	54.4	4.28
Gadsden †	.....	.....	.....	4.01
Greensborough	80	24	55.1	5.17
Livingston (1) †	82	21	51.4	5.48
Lynn †	.....	.....	.....	7.35
Maysville †	71	20	51.7	5.45
Mount Willing †	82	23	56.5	5.03
Mt. Vernon B'ks	81	24	57.1	6.55
Opelika †	78	16	51.7	3.38
Orrville †	82	22	53.0	3.24
Oxanna †	75	20	50.3	2.48
Pine Apple †	78	39	60.0	3.52
Pushmataha †	80	24	54.7	3.76
Scottsborough	74	16	48.3	.....

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama—Cont'd.	°	°	°	*Ins.*
Sturdevant †	.....	.....	.....	1.36
Talladega †	.....	.....	.....	2.74
Tallassee Falls †	.....	.....	.....	2.15
Tuscaloosa †	.....	.....	.....	5.93
Tuscumbia (1) †	75	19	48.4	5.69
Union Springs †	80	20	52.1	2.71
Uniontown	78	23	53.3	8.28
Valley Head †	72	13	46.1	4.70
Wiggins *	76	23	.....	4.53
Alaska.				
Juneau †	48	15	33.2	10.44
Killisnoo	47	18	32.0	3.24
Metlakahtla	51	26	41.8	14.30
Arizona.				
Ariz. Can. Co. Dam. †	98	35	62.2	0.00
Benson *	70	34	52.5	0.00
Arizona—Cont'd.	°	°	°	*Ins.*
Bisbee	80	34	55.7	0.00
Buckeye †	.....	.....	.....	0.00
Calabasas *†	76	36	56.8	0.00
Casa Grande *	91	32	63.3	0.00
Crittenden	.....	.....	.....	0.05
Dos Cabezos †	.....	.....	.....	T.
Dragoon Summit *	75	39	56.8	0.11
Dudleyville	88	29	61.4	0.00
Eagle Pass *	.....	.....	.....	0.00
Florence †	93	30	59.6	0.00
Fort Apache	76	19	46.6	0.00
Fort Bowie	80	33	56.4	0.00
Fort Grant	81	31	57.4	0.00
Fort Huachuca	80	23	52.8	T.
Fort Mohave †	95	33	61.3	0.00
Gila Bend (1) *†	84	48	63.5	0.00

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Arizona—Cont'd.	°	°	°	*Ins.*
Gila Bend (2)*	98	42	64.2	0.00
Grand Central Mill				0.00
Holbrook†	74	11	42.5	0.00
Maricopa(1)*	98	33	65.3	0.00
Mount Huachuca†	76	23	54.3	0.00
Natural Bridge				0.08
New River	90	40	62.6	0.00
Oracle†	78	37	55.9	0.00
Oro				0.00
Pantano*	88	43	59.1	0.00
Payson				0.00
Peoria	88	35	58.4	0.00
Phœnix	95	32	59.9	0.00
Red Rock*		34		0.00
Saint Johns†				0.00
San Carlos	94	21	55.6	0.00
San Simon*	88	36	58.9	0.00
Signal	89	33	58.8	0.00
Strawberry				0.00
Teviston				0.00
Texas Hill*	94	32	58.3	0.00
Tombstone†	78	37	59.0	0.00
Tucson(1)†	85	34	59.4	0.00
Tucson(2)*	84	45	62.2	0.00
Verdi*	65	20	45.2	0.00
Walnut Ranch†				0.00
Whipple Barracks	80	17	47.1	0.00
Willcox*	84	36	61.9	0.00
Wilgus†				0.05
Yuma*	88	46	63.9	0.00
Arkansas.				
Arkadelphia†				3.84
Arkansas City†				4.45
Black Rock*†	75	10	47.8	8.25
Brinkley†	80	20	48.6	8.19
Camden†	80	21	51.8	3.62
Conway*	75	19	47.0	5.16
Corner Stone*	78	16	48.5	4.37
Dallas†	85	18	48.9	2.39
Dardanelle†				5.28
Devall Bluff†	80	14	49.1	5.97
El Dorado†	81	17	50.2	4.77
Fayetteville†	79	12	44.2	8.40
Forrest City†	82	19	52.0	8.43
Fulton†				3.06
Gaines Landing†				5.51
Harrisburg†	76	10	52.0	9.10
Harrison†				2.88
Helena(1)†				4.21
Helena(2)†	79	19	50.6	3.94
Hope†	83	22	51.1	4.04
Hot Springs	87	16	49.0	6.02
Lead Hill*	81	12		8.85
Lonoke*	73	19	52.1	5.87
Malvern†	86	20	52.3	6.00
Monticello†	87	20	55.8	5.21
Mount Nebo†	75	15	47.5	4.00
Newport(1)†				9.01
Newport(2)†	76	20	48.7	8.96
Osceola†	76	17	47.2	10.03
Ozark†	83			4.95
Ozone†	76	15	44.0	9.92
Paragould†	80	12	45.1	0.95
Pine Bluff†	86	19	52.2	5.12
Prescott†	79	20	52.2	4.14
Stuttgart†	79	16	49.3	5.57
Texarkana†	87	22	55.6	3.27
Winslow*†	72	20	49.1	6.82
California.				
Alcalde	80	37	58.4	0.00
Alcatraz Island	71	42	56.7	0.96
Almaden*	74	41	55.7	0.28
Alvarado†	89	33	60.5	0.63
Anaheim*	85	43	59.7	0.00
Angel Island	78	41	58.8	0.72
Antioch*	80	40	57.8	0.75
Aptos*	75	32	55.2	0.27
Arcata				3.33
Athlone*	85	31	55.7	0.05
Auburn	82	41	57.8	0.95
Bakersfield(1)*	79	42	56.4	0.20
Bakersfield(2)	82		51.2	0.10
Ballast Point L. H				0.09
Barstow†	90	32	56.3	T.
Beaumont*	96	42	61.2	0.23
Belmont*	77	38	56.2	0.00
Benicia Barracks	75			0.26
Berendo*	75	35	53.7	0.10
Berkeley	74	42	56.6	1.01
Bishop Creek*	78	27	52.6	0.00
Boca*	82	10	40.2	0.25
Borden*	80	32	53.2	0.21
Boulder Creek*	88	27	53.1	1.06
Brentwood*	78	38	56.5	0.22
Brighton*	79	39	58.5	0.14
Byron*	79	40	58.6	T.
Caliente*	75	40	55.5	0.32
Calistoga*	78	30	55.4	0.75
Campo	70			0.25
C. Mendocino L. H.				3.34
Castroville*	78	39	57.0	0.33
Centreville*	82	43	59.6	0.37
Chico*	78	38	57.8	0.46
Cisco*	64	23	41.3	1.76
Claremont	81	37	61.8	0.00

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Colfax*	76	36	53.8	1.06
Colton*	86	32	58.4	0.00
Colusa†	72	30		0.32
Corning*	79	35	58.3	0.10
Crescent City				6.80
Crescent City L. H.				6.13
Davisville	77	31	55.4	0.47
Delano*	78	40	56.5	0.16
Delta*	76	35	57.5	1.99
Downey*	86	42	61.6	0.00
Dunnigan*	74	48	59.2	0.48
Dunsmuir*	70	30	49.0	2.32
East Brother L. H.				0.42
Edgwood*	62	25	42.7	0.20
El Casco*	86	30	59.2	0.00
El Dorado*	76	36	54.9	1.08
Elmira*	78	40	56.5	0.27
El Verano*	75	32	54.0	0.57
Emigrant Gap*	60	28	44.3	2.40
Esparto*	80	41	60.5	0.30
Evergreen				0.25
Farmington*	81	35	54.4	0.24
Felton*	82	26	50.9	1.20
Fernando*	83	32	60.8	0.00
Florence*	87	39	59.2	0.00
Folsom*	76	42	57.1	0.78
Forestville†	80	21	49.3	0.18
Fort Bidwell	70	19	41.8	1.57
Fort Gaston	72	29	49.0	5.56
Fort Mason	80	44	57.8	0.55
Fruto*	84	40	56.9	0.22
Galt*	88	35	58.9	0.32
Georgetown†	72	37	53.8	1.57
Gilroy*	75	32	54.1	0.11
Girard*	74	30	51.3	0.08
Glen Ellen*	78	28	54.3	2.07
Goshen*	75	30	52.8	0.65
Grass Valley				1.76
Haywards*	70	37	53.2	0.34
Hollister*	83	38	59.8	0.37
Hornbrook*	70	22	47.0	0.70
Humboldt L. H.				2.96
Huron*	84	37	56.5	0.00
Hydesville†	70	31	51.1	1.89
Indio*	100	42	67.4	0.00
Ione*	73	31	54.1	0.52
Iowa Hill*	76	38	55.2	1.51
Jackson	79	18	48.2	1.08
Jolon				0.03
Keeler*	71	38	53.6	0.00
Keene*	74	32	50.5	0.08
King City*	85	28	53.0	0.02
Kingsburgh*	80	35	55.9	0.45
Knight's Landing*	82	34	59.1	0.35
La Grange	77	36	56.4	0.13
Lathrop*	78	36	56.4	0.13
Laurel*	81	33	55.0	0.99
Lemoore*	85	30	53.8	0.13
Lime Point L. H.				0.91
Livermore*	79	32	54.6	0.38
Livingston*	80	37	56.7	1.27
Lodi*	76	30	54.5	0.49
Long Beach*	78	38	56.5	0.00
Los Angeles*	82	43	59.4	0.00
Los Banos*	73	36	53.7	0.12
Los Gatos(1)*	77	32	55.3	0.44
Los Gatos(2)	73	37	54.5	0.64
Mammoth Tank*	88	37	64.0	0.00
Mare Island L. H.				0.56
Martinez*	72	34	50.8	0.04
Marysville(1)*	80	50	63.2	0.70
Menlo Park*	71	35	56.1	0.46
Merced*	78	33	56.3	0.18
Milton (near)*	77	44	57.9	0.25
Modesto*	84	47	62.7	0.10
Mohave*	81	33	57.4	0.00
Monson*	79	35	54.1	0.38
Montague*	71	32	49.1	0.35
Monterey*	82	32	54.3	0.19
Monterey (Hotel del Monte)*	75	40	54.5	0.00
Napa City(1)	73	30	53.7	0.53
Napa City(2)*	71	32	50.9	0.60
National City	87	41	60.8	0.13
Needles†	89	37	61.5	0.00
Newark	78	40	57.4	0.55
New Castle†	76	40	56.4	1.16
Newhall*	90	30	56.6	0.00
Newman*	84	40	67.6	0.00
Niles*	80	35	57.1	1.03
Nordhoff†	89	28	56.6	T.
Norwalk*	87	40	61.0	0.00
Oakland(1)	80	34	56.9	0.55
Oakland(2)*	69	41	56.7	0.36
Ogilby*	97	50	68.7	0.00
Oleta	70	34	52.8	0.92
Ontario	89	40	63.4	0.00
Orangevale†	74	30	54.4	0.58
Orland*	81	39	58.1	0.36
Oroville*	78	43	62.0	1.56
Pajaro*	83	37	56.8	0.40
Palermo†	75	32	53.9	1.00
Paso Robles*	79	23	50.7	0.00
Petaluma	77	33	55.2	0.00
Piedras Blancas L.H.				0.35

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Pigeon Point L. H.				0.49
Placerville(1)*	82	32	51.9	1.48
Placerville(2)	70	27	47.8	1.97
Pleasanton	85	32	54.6	0.20
Pt. Ano Nuevo L.H.				0.70
Point Arena L. H.				3.37
Point Bonita L. H.				1.04
Pt. Conception L.H.				0.05
Point Fermin L. H.				0.25
Pt. Hueneme L. H.				0.15
Point Montara L. H				0.88
Point Pinos L. H.				0.22
Point Reyes L. H.				1.19
Point Sur L H				0.35
Pomona*	92	36	60.7	0.00
Portersville*	82	38	55.6	0.36
Presidio of San F.	77	37	56.8	0.88
Puente*	88	42	59.5	0.00
Ravenna*	85	40	58.8	0.00
Red Bluff	78	40	60.7	0.42
Redding(1)	78	35	56.3	0.08
Redding(2)†	78	36	56.6	0.68
Redlands				0.00
Riverside(1)†	90	34	58.4	0.00
Roe Island L. H.				0.35
Rocklin*	78	40	57.4	0.73
Rumsey*	77	40	57.2	0.35
Sacramento(1)	70	25	46.9	0.46
Sacramento(2)*	80	39	55.7	0.47
Sacramento(3)*	69	36	54.3	0.37
Saint Helena*	77	30	60.5	0.73
Salinas(1)				0.30
Salinas(2)*	68	40	51.7	0.20
Salton*	98	38	62.4	0.00
Sanger Junction*	80	35	55.3	0.40
San Ardo(1)*	84	33	55.1	0.00
San Ardo(2)†	88	30	56.4	T.
San Bernardino†	86	31	57.5	T.
San Diego B'ks		41		0.25
San Gabriel*	86	39	58.1	0.00
San José*	76	36	56.5	0.46
San Luis L. H.				0.08
San Mateo*	70	38	56.4	0.65
San Miguel*	85	30	55.2	0.00
San Pedro*	79	45	61.9	0.00
Santa Ana*	86	41	60.9	0.00
Santa Barbara(1)	82	41	58.8	0.00
Santa Barbara(2)*	75	40	58.5	0.00
Santa Clara	76	34	54.6	0.43
Santa Cruz(1)*	79	39	59.2	0.64
Santa Cruz(2)	80	31	54.7	0.58
Santa Cruz L. H				0.48
Santa Margarita*	77	26	47.2	0.00
Santa Monica*	76	42	57.3	0.00
Santa Paula*	84	43	61.3	0.00
Santa Rosa	73	33	54.4	1.50
Selma*	78	32	54.1	0.45
Seven Palms*	98	48	72.2	0.00
Shasta Springs†	68	29	45.3	1.75
Shingle Springs*	70	36	55.2	1.10
Sims*	73	24	46.5	3.51
Sisson	64	28	43.8	0.35
Soledad*	86	32	54.7	0.00
Sonoma*	77d	31d	53.6d	0.90
Soquel*	78	32	53.8	0.00
South Vallejo*	74	42	56.5	0.16
Spadra*	92	38	59.5	0.00
Steeles	84	39	60.6	0.39
Stockton(1)	69	35	54.7	0.29
Stockton(2)*	70	37	56.1	0.07
Summit*	60	27	40.7	0.30
Suisun City*	78	32	55.5	0.27
Susanville*†	65	24	42.7	1.10
Tehachapi*	70	30	50.6	0.00
Tehama*	78	40	58.2	0.50
Templeton*	82	29	53.1	0.04
Towles*	75	32	50.1	2.23
Tracy*	80	34	61.1	0.10
Traver*	80	30	58.4	0.51
Trinidad L. H				3.02
Tropico*	88	40	60.9	0.00
Truckee(1)*	64	14	38.4	0.45
Tulare*	80	40	58.0	0.25
Turlock*(1)	74	36	56.2	0.04
Turlock(2)	84	32	54.0	0.00
Upper Lake	80	27	52.7	0.71
Upper Mattole*	78	33	54.6	4.55
Vacaville(1)*	81	38	57.6	0.41
Vacaville(2)*	87	42	59.0	0.00
Valley Springs*	74	42	57.8	0.25
Ventura†				0.00
Vina*	80	41	57.4	0.25
Volcano Springs*	97	42	69.4	0.00
Volta	78	36	56.0	0.05
Walla Walla Creek*	64	23	41.7	1.10
Walnut Creek	78	33	56.0	0.03
Westley*	79	39	59.1	0.07
Wheatland	79	34	54.9	0.75
Whittier*	83	46	62.2	0.00
Williams*	78	35	59.8	0.15
Willow(1)†	74	36	55.2	0.43
Willow(2)*	76	36	52.1	0.51
Winchester†	94	31	61.9	0.00

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
California—Cont'd.	°	°	°	*Ins.*
Winters*	80	38	60.4	0.34
Woodland	77	37	54.4	0.40
Yerba Buena L H				0.1,
Colorado.				
Abbott				0.24
Agate				0.45
Alamosa†				0.05
Amherst†				0.00
Antonito†	67	12	36.6	0.01
Apishapa*†	55	18	38.5	1.10
Arboles				0.00
Aroya				0.05
Aspen	62	2	31.2	0.90
Avoca†				0.20
Bennet				0.90
Box Elder				0.80
Brandon				T.
Breckenridge	70	—12		3.72
Brush				0.30
Burlington†	79	— 2	35.0	0.24
Byers				0.20
Carson†	60	7	23.7	0.73
Castle Rock†	78j	— 9j	38.2j	0.23
Cheyenne Wells*†	79	8	37.3	T.
Climax*†	54	— 3	21.3	6.70
Como (near)†	62	6	29.1	0.51
Crook†	83	—10	36.8	0.20
Cumbres†	62	0	29.4	0.52
Deer Trail				0.12
Del Norte†	73	9	40.0	0.00
Delta†	74	8	40.0	0.15
Dillon				3.53
Downing†				0.80
Dumont				1.14
East Dale				0.00
First View				T.
Fort Collins†	76	— 6	35.2	0.60
Fort Collins (near)				0.69
Fort Logan	78	— 4	38.8	0.30
Fruita†d	68	12	40.0	0.02
Gaynor				0.48
Georgetown†c	65	12	34.1	1.07
Glen Eyrie†	67	3	36.8	0.70
Gold Hill				1.15
Grand Junction	50	10	33.8	T.
Greenhorn†	75	1	37.8	0.50
Grover†	70	— 8	31.8	0.25
Hugo	72	4	35.5	0.25
Husted†	73	— 2	35.5	0.07
Idaho Springs	73	2	35.6	0.34
Jefferson*†	55	5	27.3	0.82
Julesburg†	79	— 9	34.6	0.22
Kirk				0.30
Kit Carson				T.
Lamar†	84	6	40.0	0.57
La Porte				0.29
Las Animas†	82	4	38.1	0.00
Lavender				0.00
Lay				0.30
Le Roy*†	77	— 6	35.1	0.37
Leslie				0.25
Livermore	64	— 4	30.8	0.82
Loveland				0.16
Magnolia				0.72
Manhattan				0.39
Meeker	65	— 3	33.0	1.23
Middle Box Elder				0.34
Minneapolis				0.85
Monte Vista(1)	60	8	32.6	0.05
Moraine†	65	9	33.9	0.94
Pagoda (near)†	70	— 4	33.0	1.47
Parachute†c	70	12	38.2	
Paradox†				0.01
Platoro†	60	— 1	28.3	0.35
Red Cliff				2.25
Rico				0.40
River Bend				0.00
Robb†	76	— 5	37.0	0.25
Rocky Ford†	76	4	38.1	0.35
Saint Cloud				0.65
San Acacia				0.00
Sanborn				0.00
San Luis†	70	5	36.3	0.15
Sedgwick				0.05
Sheridan Lake*†	78	3	36.8	0.03
Smoky Hill Mine†	80	— 2	38.0	3.90
Springfield†				2.17
Stamford				2.00
Steamboat Springs†	68	—10	29.6	1.90
Surface Creek†	64	11	40.6	T.
Table Rock A.	72	— 6	34.0	0.59
T. S. Ranch†	66	12	41.4	0.04
Thon†	84	— 4	38.6	0.24
Twin Lakes				1.21
Vilas				0.95
Ward District				1.13
Watervale				1.20
Watkins				0.25
Wray				0.20
Yuma†				0.13
Connecticut.				
Canton	62	5	39.0	3.81
Colchester	66	8	40.5	3.64
Falls Village				3.11
Fort Trumbull	64	11	43.4	3.22

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Connecticut—Cont'd.	°	°	°	*Ins.*
Hartford(2)	.....	.....	.....	2.64
Lake Konomoc	.....	.....	.....	3.22
Lebanon	.....	.....	.....	3.46
Mansfield	62	5	38.2	3.09
Middletown	64	8	39.5	3.00
New Hartford(1)†*	67	2	34.0	3.18
New Hartford(2)	.....	.....	.....	3.56
N. Grosvenor Dale	63	12	42.8	3.25
North Woodstock	.....	.....	.....	3.00
Norwalk†	69	9	41.4	2.72
Southington*	60	8	38.5	2.65
South Manchester	.....	.....	.....	2.66
Stevenson	.....	.....	.....	4.06
Thompson	64	5	37.9	.....
Voluntown†	66	9	39.8	3.57
Wallingford†	.....	.....	.....	2.87
Waterbury	60	5	37.0	3.33
West Simsbury	.....	.....	.....	3.26
Delaware.				
Dover†	68	16	43.5	1.67
Kirkwood*	66	.....	40.8	.....
District of Columbia.				
Dist'ing Reservoir*	62	16	43.7	2.29
Long Bridge†	.....	.....	.....	1.95
Rec'ing Reservoir*	65	17	43.2	2.05
Washington B'ks	70	18	45.8	1.73
West Washington*	70	16	45.1	2.20
Florida.				
Archer†	88	30	61.2	0.70
De Land(1)†	87	34	61.5	1.47
De Land(2)	78	35	60.5	.....
Eustis†	81	35	62.2	1.73
Fort Barrancas	88	25	59.8	4.39
Fort Meade†	80	40	64.8	1.33
Gainesville†	80	32	61.0	0.62
Hypoluxo*†	82	55	73.1	2.01
Manatee†	84	38	64.7	1.77
Merritts Island†	85	42	68.0	1.67
Miami	78	62	71.4	2.51
Myers†	83	43	66.3	2.00
Ocala*†	78	33	58.9	.....
Orange City†	84	35	63.8	2.07
Pasadena†	82	33	62.8	2.32
St. Francis B'ks	76	36	61.6	1.69
St. Petersburg†	83	36	64.6	2.42
Tallahassee†	81	27	57.6	2.90
Tarpon Springs†	83	34	62.7	1.98
Georgia.				
Albany†	81	26	57.2	3.09
Allapaha†	80	28	56.3	1.45
Americus†	81	23	55.8	3.16
Athens (1)	76	22	49.2	4.20
Athens (2)†	79	23	49.0	4.56
Blakely*†	81	25	57.4	2.33
Camak†	80	20	52.6	2.88
Canton†	.....	.....	.....	4.34
Cartersville†	74	20	49.9	2.79
Columbus†	74	25	50.9	4.29
Cordele†	88	32	56.7	2.61
Diamond	.....	.....	.....	5.22
Eastman†	76	24	54.2	2.69
Elberton†	83	22	50.8	3.37
Forsyth	86	25	55.9	3.56
Fort Gaines†	81	20	51.4	3.54
Fort McPherson	78	17	49.6	3.31
Gainesville†	76	20	48.9	4.23
Gillsville*†	82	24	51.6	4.56
Griffin†	78	20	51.0	1.79
Hephzibah†*	79	30	55.6	0.62
Lithia Springs	78	25	55.0	0.67
Louisville	82	24	53.0	2.50
Macon†*f*	72	25	51.8	2.76
Marietta*†	74	17	45.3	3.05
Milledgeville†	80	25	52.6	3.02
Millen†	82	21	52.8	1.77
Monticello†	.....	.....	48.8	3.45
Newnan†	77	17	51.0	2.16
Point Peter*	.....	20	48.2	3.10
Poulan†	83	25	53.9	3.76
Quitman(1)	80	28	57.4	2.55
Quitman(2)†	82	28	58.4	1.95
Resaca†	.....	.....	.....	4.77
Rome†	.....	.....	.....	3.63
Thomasville(2)†	88	27	57.6	2.78
Toccoa†	78	20	48.4	4.99
Union Point†	80	20	51.6	4.11
Washington†	79	20	51.2	4.73
Way Cross†	78	32	64.0	0.42
Waynesborough†	80	26	53.8	2.99
West Point†	76	25	54.5	3.30
Idaho.				
American Falls†	69	— 6	36.8	0.57
Boise Barracks	70	14	39.2	0.96
Fort Sherman	64	11	39.6	2.61
Garden Valley	60	8	36.5	4.28
Henrys Lake†	60	—22	23.9	2.55
Payette	70	12	40.2	0.68
Ruthburg*†	72	18	38.1	1.68
Illinois.				
Alton†	.....	.....	.....	4.99
Aurora(1)†	57	— 9	31.4	4.21
Aurora(2)	57	— 5	32.2	5.16
Beardstown†	.....	.....	.....	4.94
Beason*	62	2	35.5	4.52
Carlinville*	68	9	37.2	5.25

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Illinois—Cont'd.	°	°	°	*Ins.*
Centralia*...	71	10	40.0	4.38
Charleston	67	4	37.7	5.59
Chester†	.....	.....	.....	6.26
East Peoria*	67	3	39.0	4.32
Flora	72	6	40.0	6.77
Fort Sheridan	56	— 2	32.5	4.09
Golconda*...	74	12	43.6	7.94
Greenville	69	5	39.2	6.29
Griggsville†	64	3	36.9	4.15
Hennepin†	58	— 9	28.8	4.66
Irishtown	.....	.....	.....	6.05
Jerseyville	63	5	40.4	6.55
Jordans Grove*	74	9	40.6	6.23
Lanark*	60	— 7	29.3	3.71
Louisville*	71	10	38.7	6.60
Martinsville*	75	9	39.9	3.61
Mascoutah	72	9	42.6	6.40
Mattoon*	62	12	41.4	4.40
McLeansborough*	70	8	42.1	5.20
Mount Carmel†	.....	.....	.....	5.48
New Haven†	.....	.....	.....	6.14
Olney(1)*	71	9	41.5	6.71
Olney(2)*	72	10	39.7	10.92
Oswego*	54	—11	30.8	4.42
Ottawa†	76	— 8	33.9	4.75
Palestine†	71	9	39.0	5.65
Pana*	69	7	40.5	10.09
Peoria(1)†	.....	.....	.....	4.51
Peoria(2)*	64	2	37.7	4.08
Philo†	66	3	36.4	6.14
Rantoul*	65	— 5	34.0	5.01
Riley†	55	— 8	30.1	3.75
Rockford	56	— 7	31.4	3.67
Rock Island Ars'l	57	—11	32.0	3.47
Rushville	67	4	35.0	4.93
Sandwich†	56	— 8	31.8	4.75
Sycamore*	54	— 7	31.8	4.21
Warsaw†	.....	.....	.....	0.25
White Hall*	68	6	37.7	4.69
Winnebago*†	52	— 8	30.5	3.71
Indiana.				
Angola	62	8	35.9	6.41
Butlerville	65	11	40.2	5.12
Columbia City	60	9	35.5	6.12
Columbus	64	12	40.2	5.22
Connersville†	66	12	40.6	6.03
De Gonia Springs	70	14	44.9	5.30
Delphi	63	5	35.3	6.35
Evansville†	.....	.....	.....	8.44
Farmland	66	12	39.9	5.90
Franklin	65	10	38.9	5.90
Huntingburgh	70	16	40.7	6.10
Huntington†	.....	.....	.....	5.17
Jeffersonville	68	16	43.4	6.01
La Fayette†	64	— 1	37.1	6.31
Logansport(1)†	.....	.....	.....	7.69
Logansport(2)	65	10	38.6	6.42
Marengo	73	16	44.5	6.61
Marion†	65*f*	10*i*	38.2	4.85
Mauzy	66	9	38.8	5.84
Michigan City	63	5	34.8	5.05
Mount Vernon(1)†	.....	.....	.....	7.05
Mount Vernon(2)	.....	.....	.....	6.66
Point Isabel†	62	8	36.9	8.20
Princeton*†	68	9	42.0	6.35
Rockville	65	3	38.5	5.98
Rushville†	.....	.....	.....	5.78
Seymour†	66	13	42.5	6.15
Shelbyville*†	64	12	39.7	5.46
Terre Haute†	62	7	40.7	4.83
Valparaiso†	60	3	33.9	4.14
Vevay	71	15	43.2	5.77
Vincennes†	.....	.....	.....	7.21
Worthington†	68	8	38.8	5.71
Indian Territory.				
Fort Supply	84	10	44.8	1.21
Healdton†	88	26	53.7	0.97
South McAlester†	88	28	62.6	2.65
Tulsa†	.....	.....	.....	1.30
Woodward†	.....	.....	.....	1.04
Iowa.				
Alta(1)†	66	—16	27.0	0.91
Ames(1)*	63	—12	29.7	1.95
Carroll†	64	—13	31.3	1.09
Fairfield†	66	— 6	33.8	3.54
Le Claire†	.....	.....	.....	3.00
Mason City†	62	—17	28.6	0.36
Mount Pleasant(1)*	60	.....	33.3	3.32
Murray†	66	— 4	31.1	0.88
Kansas.				
Abilene†	87	8	42.2	T.
Allison*†	64	— 3	32.4	0.28
Altoona*†	79	12	41.0	1.03
Atchison†	81	6	39.4	1.09
Bucklin	.....	.....	.....	0.10
Buffalo Park*	80	2	.....	T.
Burr Oak*	73	1	.....	.....
Cawker City*	70	4	37.1	0.10
Coldwater	82	7	42.3	0.60
Collyer*	83	0	39.0	.....
Columbus†	87	11	45.4	2.96
Concordia	83	4	37.8	0.20
Cunningham*†	82	6	39.6	0.39
Downs	.....	.....	.....	0.50
Elco*	82	8	41.3	T.

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Kansas—Cont'd.	°	°	°	*Ins.*
Elk Falls	82	26	53.4	0.88
Emporia*†	75	10	41.6	0.35
Englewood*	78	8	42.4	0.29
Eureka Ranch†	81	1	40.5	0.13
Ft. Leavenworth(1)	75	7	39.6	0.91
Ft. Leavenworth(2)	78	8	38.6	0.98
Fort Riley	79	7	43.1	0.06
Fort Scott*	80	8	.....	1.07
Globe*	79	.....	35.7	0.98
Gove City*†	73	1	37.5	0.00
Grainfield*	71	3	.....	0.00
Grenola*	84	10	44.8	0.20
Grinnell*	80	6	.....	0.00
Halstead*	78	8	39.0	0.22
Havensville*†	80	8	37.7	0.48
Horton†	82	6	38.9	0.79
Hutchinson†	85	9	42.8	0.32
Independence†	81	12	42.6	1.14
Kansas City	82	7	38.4	1.19
Kellogg	87	5	42.2	1.04
Kiowa	85	11	44.9	0.47
Kirwin†	.....	.....	.....	0.00
La Crosse	79	4	42.6	0.08
La Harpe	.....	.....	38.5	0.77
Lakin†	78	— 1	37.4	0.10
Lawrence	80	10	39.5	0.81
Lebo†	85	5	40.2	0.94
Leoti†	80	— 3	36.1	T.
Manhattan(1)†	.....	.....	.....	0.33
Manhattan(2)	86	8	38.7	0.26
Manhattan(3)*	83	7	37.9	0.28
Mankato†	82	2	36.8	0.25
McAllaster	80	—10	39.4	.....
McPherson†	82	7	41.6	0.16
Medicine Lodge	.....	.....	.....	0.57
Minneapolis	77	8	38.4	0.05
Monument	79	— 7	.....	.....
Morse†	81	6	37.2	1.67
Morton*	86	4	40.4	0.50
New Engl'd Ranch†	84	— 1	40.0	0.00
Oakley*	84	0	.....	.....
Oberlin†	.....	.....	.....	0.10
Oswego†	83	11	44.5	1.57
Page City*	78	2	.....	T.
Pauline*	81	6	38.9	0.20
Pleasant Dale*	79	3	37.0	0.03
Rome*	84	8	43.7	0.79
Salina*†	77	9	39.6	0.11
Sedan†	81	10	43.3	0.66
Seneca†	80	6	36.4	0.49
Sharon Springs*	80	4	37.9	0.00
Sterling†	82	4	38.1	0.02
Ulysses	.....	.....	.....	0.45
Wakefield*	85	9	41.0	0.28
Wa Keeney*	78	.....	.....	.....
Wallace(1)†	.....	.....	.....	0.01
Wallace(2)	80	2	.....	T.
Weskan(1)*	79	0	36.6	T.
Yates Centre†	82	4	40.8	0.65
Kentucky.				
Bowling Green*†	72	12	46.7	6.56
Burkesville†	.....	.....	.....	5.00
Burnside†	.....	.....	.....	5.46
Caddo*†	69	17	39.6	3.75
Catlettsburgh†	.....	.....	.....	6.77
Canton*†	74	15	45.2	8.41
Central City	74*g*	11*g*	41.6*g*	10.01
Earlington	75	18	46.7	5.60
Edmonton†	72	14	43.9	6.22
Falmouth(1)†	.....	.....	.....	6.95
Fort Thomas	76	12	38.0	5.79
Frankfort(1)†	.....	.....	.....	3.56
Franklin*	75	12	45.5	7.30
Greensburgh†	.....	.....	.....	5.22
Harrodsburgh†	75	10	42.2	5.21
Louisa†	.....	.....	.....	3.47
Middlesborough†	74	14	43.3	3.86
Newport Barracks	71	13	41.0	4.13
Paducah†	.....	.....	.....	6.42
Pellville†	72	11	42.7	5.78
Princeton†	74	12	43.0	6.78
Richmond†	70	16	45.6	4.40
Shelbyville†	71	10	42.3	5.87
South Fork†*m*	.....	.....	39.3	.....
Louisiana.				
Abbeville	90	26	60.0	5.31
Alexandria†	86	20	56.8	4.76
Amité City†	85	23	57.6	5.30
Baton Rouge	87	25	55.6	7.17
Cameron†	88	20	60.4	6.04
Cheneyville†	84	24	58.5	11.14
Coushatta(1)†	.....	.....	.....	6.25
Coushatta(2)†	88	17	56.1	6.62
Davis*d*	85	18	56.4	7.04
Edgard	81	32	59.6	6.05
Emilie	80	28	57.9	6.46
Girard†	.....	.....	.....	6.13
Grand Cane	83	22	54.4	5.70
Grand Coteau	82	28	58.8	4.85
Homer†	87*f*	24*f*	56.2*f*	3.58
Houma†	83	25	58.0	4.08
Jackson Barracks	83	27	58.0	3.68
La Fayette†	80	28	59.2	5.53
Lake Charles	83	22	55.7	4.70
Lawrence†	79*d*	30*d*	58.8*d*	4.12

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Louisiana—Cont'd.	°	°	°	*Ins.*
Liberty Hill	90	21	55.2	6.33
Luling	82	29	55.3	3.29
Mandeville	81	27	59.3	3.56
Marksville†	86	22	57.4	9.00
Maurepas	82	27	58.2	5.16
Melville†	86	23	57.5	4.22
Minden†	87	21	55.2	4.61
Monroe†	84	22	55.2	6.39
Natchitoches†	86	19	55.6	7.14
New Iberia	83	25	59.8	6.20
N. La. Ex. Station	84	19	52.6	6.67
Paincourtville	83	26	58.4	4.93
Plaquemine	85	26	56.7	5.42
Shell Beach	80	29	57.8	.....
Thibodeaux	.....	.....	.....	4.43
West End	.....	.....	.....	4.98
Winnsborough	87	13	53.4	5.37
Maine.				
Bar Harbor	60	6	38.6	3.12
Belfast*	56	6	37.0	3.02
Bethel	.....	.....	.....	2.12
Calais	60	7	37.9	3.88
Cornish	59	3	35.4	2.77
East Machias†	58	5	36.9	4.58
Fairfield	60	— 2	35.5	2.14
Farmington†	65	— 6	33.9	2.69
Fort Preble	62	9	40.6	1.75
Kennebec Arsenal	56	2	35.3	2.75
Kents Hill	57	— 2	34.8	1.79
Lewiston	57	2	35.6	2.66
Mayfield*	54	— 6	30.8	2.91
Orono†	61	3	37.0	2.78
West Jonesport*	56	7	38.6	.....
Maryland.				
Barren Creek Sp'gs†	69	14	43.9	2.26
Boettcherville	67	12	37.7	2.30
Cumberland(1)†	62	15	40.9	2.92
Cumberland(2)	73	20	45.6	2.70
Darlington†	65	10	41.6	.....
Easton†	67	18	44.3	1.19
Fort McHenry	64	15	43.8	1.60
Frederick	67	16	43.6	1.85
Great Falls*	64	15	42.2	1.98
Jewell	63	19	44.0	2.71
Leonardtown†	.....	.....	41.9	2.63
McDonogh	69	13	42.5	1.47
Mt. St. Mary's Col.	75	12	40.4	2.54
New Market	62	13	40.5	2.68
Taneytown†	.....	.....	.....	2.09
Woodstock	69	15	40.6	1.82
Massachusetts.				
Adams	68	2	39.1	.....
Amherst	64	4	38.4	2.71
Amherst Ex Sta(1)	63	4	37.0	2.13
Amherst Ex Sta(2)	64	4	39.7	2.99
Andover	66	5	37.3	2.79
Ashland	.....	.....	.....	3.14
Blue Hill (sum't)	62	6	38.5	2.92
Blue Hill (base)	65	8	39.4	2.91
Blue Hill (valley)	67	9	38.8	2.56
Boston	.....	.....	.....	2.65
Cambridge(1)	68	8	40.0	2.22
Cambridge(2)	65	9	38.8	3.08
Chestnut Hill	66	10	41.4	2.70
Chicopee	.....	.....	.....	2.56
Clinton	.....	.....	.....	1.72
Concord†	66	6	36.6	2.65
Cotuit	57	20	40.9	1.72
Deerfield*	64	4	36.2	.....
Dudley	65	8	37.0	1.35
Egg Rock, Nahant	61	10	40.2	.....
Fall River(1)*	63	10	40.7	2.90
Fiskdale	.....	.....	.....	2.07
Fitchburg(1)*	60	7	36.7	2.97
Fitchburg(2)	63	5	37.8	2.68
Florida(2)	58	— 3	32.3	3.00
Fort Warren	67	5	39.2	2.78
Framingham	66	6	39.0	3.04
Gilbertville	64	3	35.4	2.31
Groton(1)	65	5	39.4	2.15
Heath*	68	2	35.4	.....
Kendall Green	64	8	40.0	2.59
Lake Cochituate	68	4	39.7	2.86
Lawrence	64	7	39.8	3.29
Leicester	56	2	37.4	2.55
Leominster	.....	.....	.....	2.64
Long Plain	64	12	40.2	4.07
Lowell(1)	64	7	38.9	1.91
Lowell(2)	66	4	37.8	.....
Lowell(3)	67	6	39.4	.....
Ludlow(1)	63	0	36.3	3.00
Lynn	59	5	35.2	2.31
Mansfield	65	8	38.7	3.08
Medford	.....	.....	.....	2.33
Middleborough	66	9	38.4	3.04
Milton*	68	11	40.4	2.28
Monson	65	4	37.6	2.36
Mount Nonotuck	.....	.....	.....	2.50
Mystic Lake	.....	.....	.....	2.78
Mystic Station	.....	.....	.....	2.50
Nahant*c*	59	23	41.8	.....
New Bedford(1)	61	9	40.9	3.17
New Bedford(2)	63	11	41.4	3.07
Newburyport(1)	66	8	39.7	2.34
Newburyport(2)	.....	.....	.....	2.42

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Massachusetts—Con.	°	°	°	*Ins.*
Northampton	58	7	38.0	2.80
North Billerica	65	6	39.4	3.60
Plymouth*	67	14	42.4	1.79
Princeton	62	3	37.2	2.70
Provincetown	60	23	42.8	1.52
Randolph	.....	.....	.....	2.86
Roberts Dam	.....	.....	.....	2.57
Royalston*	62	4	39.4	5.38
Salem (2)	.....	.....	.....	1.93
Savoy	58	— 1	30.6	6.07
Somerset*†	68	10	42.3	2.95
South Hingham	.....	8	.....	2.94
Springfield Armr'y.	63	6	39.0	3.00
Taunton (1)	65	10	40.5	3.02
Taunton (2)	66	9	40.2	3.16
Taunton (3)	66	10	39.8	3.40
Taunton (4)	68	9	39.1	2.99
Wakefield	65	6	39.2	2.52
Waltham	.....	.....	.....	2.67
Wellesley	64	7	39.0	2.72
Westborough	65	8	39.8	2.80
Williamstown	62	2	35.7	1.80
Winchester	.....	.....	.....	2.43
Michigan.				
Adrian	59	— 5	34.6	5.91
Albion (1)	58	2	36.4	6.02
Allegan	59	5	34.9	*5.86
Alma	59	4	33.6	5.76
Ann Arbor	59	7	34.6	4.96
Arbela	.....	.....	.....	4.95
Atlantic	39	5	24.0	3.78
Ball Mountain	58	2	34.0	5.42
Bear Lake	50	8	32.7	6.19
Bellaire	52	6	30.0	7.33
Benton Harbor	65	10	38.4	5.11
Bensonia	56	14	32.5	5.70
Berlin	62	6	34.9	5.80
Berrien Springs (1)*	64	9	36.9	6.77
Berrien Springs (2)	.....	.....	.....	5.96
Birch Run	59	— 1	34.1	4.36
Birmingham	62	0	36.1	5.51
Bronson	56	2	31.6	4.73
Calumet	51	0	26.7	3.30
Caldwell	52	5	30.8	5.48
Charlevoix	50	17	34.5	3.74
Cheboygan	49	9	30.9	4.96
Colon	54	7	32.4	5.56
Concord	56	3	34.3	5.14
Crystal Falls	60	— 2	27.6	4.00
Eden	58	4	35.2	4.77
Evart	65	2	32.4	5.52
Fairview	58	4	34.7	3.34
Fitchburgh	58	0	34.4	5.13
Flint	59	3	34.1	3.37
Fort Brady	46	3	30.4	5.03
Fort Mackinac	60	9	33.2	3.87
Fort Wayne	61	3	36.0	5.11
Fremont*	54	10	32.3	6.00
Grand Rapids	55	9	36.0	6.33
Grape	66	7	37.8	4.23
Grayling	51	0	32.5	4.10
Hanover	60	6	36.7	5.61
Harbor Springs	50	11	32.7	6.96
Harrisville	52	10	32.9	5.03
Hart	55	14	36.3	5.65
Highland Station*	53	3	34.2	5.13
Hillsdale	58	0	34.5	5.39
Howell	57	1	32.8	4.56
Hudson	58	— 4	33.2	5.92
Ivan	52	8	30.7	6.50
Jackson	60	4	36.1	.....
Jeddo	61	7	34.8	4.61
Kalamazoo	60	10	35.7	4.96
Lansing	58	4	34.7	4.39
Lathrop	54	1	28.7	2.40
Madison	59	3	34.6	6.21
Marshall	58	— 3	34.2	4.77
May	56	8	34.3	4.78
Montague	53	13	33.4	3.73
Mottville	62	0	35.0	6.70
Nobie	56	6	33.5	4.86
North Marshall	60	— 3	31.8	5.28
Olivet	58	4	32.0	4.70
Ovid	58	4	33.4	4.45
Parkville	.....	.....	.....	6.30
Paw Paw	60	9	34.2	5.40
Pontiac	60	13	37.2	5.30
Pulaski	58	— 1	34.7	4.94
Rawsonville	61	5	37.0	3.05
Rockland	67 *l*	31 *l*	27.8 *l*	3.48
Saint Ignace	48	5	31.6	4.38
Saint Johns	55	6	36.0	4.73
Sand Beach	55	12	32.4	6.03
Thornville*	60	9	36.6	5.32
Vandalia	58	9	35.3	5.23
Vienna	.....	.....	.....	5.12
Washington	60	7	35.0	4.82
Weldon Creek	62	8	33.1	6.98
White Pigeon	60	— 4	31.6	4.27
Williamston	56	6	36.8	5.00
Ypsilanti	58	— 2	32.0	4.82
Minnesota.				
Alexandria†	.....	.....	.....	0.57
Alma City †	59	—16	25.6	0.52
Crookston †	63	—24	20.3	1.62

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Minnesota—Cont'd.	°	°	°	*Ins.*
Farmington*	62	—14	26.8	1.05
Fergus Falls†	.....	.....	.....	0.64
Fort Ripley†	.....	.....	.....	0.35
Fort Snelling	58	—15	23.8	0.95
Grand Meadow*	59	—11	23.8	0.58
Granite Falls*	43	—20	21.8	.....
Kinbrae*	62	—25	24.1	0.58
Leech Lake*	56	—21	20.9	0.60
Mankato	70	—13	28.1	0.40
Minneapolis*	56	—13	25.5	0.82
Montevideo†	68	—23	24.7	0.43
Morris	61	—27	21.8	0.60
Northfield†	58	—12	26.0	0.53
Ortonville†	.....	.....	.....	0.68
Pine River*	53	—22	20.2	0.64
Red Wing	58	— 8	27.8	0.86
Redwood Falls†	.....	.....	.....	2.05
Rolling Green	67	—19	25.2	0.70
Saint Charles*†	57	—12	25.6	0.46
Mississippi.				
Aberdeen†	82	17	50.9	7.54
Agricultural Col'ge	80	19	52.2	7.74
Batesville†	78	16	53.0	4.60
Bay Saint Louis†	82	33	58.8	6.50
Booneville	75	18	51.0	9.16
Brookhaven†	80	19	56.2	9.49
Canton†	80	23	53.8	7.22
Columbus (1)†	.....	.....	.....	5.32
Columbus (2)†	81	21	53.4	8.21
Corinth†	76	20	50.2	4.88
Edwards†	81	23	54.8	6.72
Enterprise†	85 *l*	22 *l*	55.2 *l*	5.03
Fayette†	83	23	56.8	9.76
Greenville	76	22	52.6	5.40
Hattiesburgh†	87	26	58.8	4.91
Hazlehurst†	87	20	55.6	8.36
Hernando†	79	18	51.0	4.85
Holly Springs (2)†	76	18	49.2	5.17
Jackson†	82	24	57.2	3.29
Kosciusko†	80	19	52.8	8.20
Logtown†	79	27	58.9	3.40
Louisville†	89	19	54.0	7.98
Macon†	82	26	53.7	5.28
Natchez†	85	24	56.5	10.30
Okolona†	80	20	52.0	6.57
Palo Alto	80	19	50.8	6.14
Pontotoc	82	18	49.4	8.36
Port Gibson†	87	18	55.4	7.95
Rienzi*	78	20	49.7	6.75
Ship Island†	79	29	61.0	3.59
Summit†	85c	22 *d*	56.3 *d*	8.57
Vaiden†	88	17	51.8	7.21
Washington†	91	23	55.0	9.66
Water Valley*	81	16	50.0	5.80
Waynesboro' (1)†	84	22	52.0	2.42
Waynesboro' (2)†	84	22	55.1	3.72
Yazoo City†	.....	.....	.....	6.82
Missouri.				
Adrian†	78	— 4	35.2	1.86
Appleton City†	77	8	41.1	2.64
Austin*	80	10	41.0	0.25
Brunswick	68	3	38.7	2.25
Cape Girardeau†	.....	.....	.....	7.34
Carrollton†	71	5	37.4	1.65
Carthage*†	80	12	41.6	3.36
Centreville	.....	.....	.....	6.13
Chillicothe (1)	71	5	46.0	1.15
Chillicothe (2)	66	0	40.5	1.25
Conception	69	0	36.5	1.15
Concordia*	75	10	.....	1.89
Dadeville†	.....	.....	.....	3.32
East Lynn*	73	8	39.6	1.51
Eight Mile*	76	6	39.7	1.22
Eldon*	76	8	41.3	4.13
Excelsior Springs*	82	— 7	33.6	0.79
Fayette	70	4	39.4	2.85
Fox Creek*	66	6	39.0	5.35
Glasgow	69	3	38.3	2.60
Gordonville*†	71	12	44.5	6.16
Harris*†	68 *f*	5 *f*	36.8 *g*	0.86
Harrisonville†*	71	.....	36.0	1.23
Hermann*†	69	10	39.8	6.00
Jefferson Barracks	74	9	42.7	5.30
Jefferson City†	71	2	39.3	4.71
Jerome†	.....	.....	.....	6.39
Lamonte (2)†	.....	.....	.....	2.79
Lebanon*	76	8	42.6	6.12
Liberty	74	4	37.4	0.80
Louisiana Bridge†	.....	.....	.....	2.54
Marble Hill	72	10	42.6	6.18
Marshall (2)	71	6	42.0	2.60
Mine La Motte	72	10	44.3	3.61
New Haven*	70	6	39.0	6.05
Oak Ridge*	80	17	44.8	9.75
Oregon (1)	78	6	36.8	1.43
Oregon (2)	70	7	36.2	1.36
Pickering*	.....	— 2	31.3	1.31
Platte River*	74	4	36.6	1.15
Princeton*	70	2	36.2	1.80
Saint Charles (2)	70	7	39.0	5.25
Saint Joseph†	.....	.....	.....	1.63
Saint Louis	70	8	40.6	5.92
Sedalia	75	3	38.5	2.64
Shelbina	.....	.....	.....	3.20
Stellada†	76	6	41.4	2.27

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Missouri—Cont'd.	°	°	°	*Ins.*
Warrensburgh*	74 *d*	9 *e*	40.3 *d*	1.62
Warrenton	.....	10	38.9	6.89
Withers Mills	.....	.....	.....	5.05
Zeitonia	.....	.....	.....	8.67
Montana.				
Camp Poplar River	58	—12	22.4	0.94
Fort Assinaboine	66	—11	29.6	0.12
Fort Custer	78	—11	35.4	1.68
Fort Keogh	65	—12	26.8	0.13
Fort Missoula	63	0	33.8	2.32
Nebraska.				
Agee	.....	—12	27.1	.....
Alliance†	80	—12	33.0	0.47
Ansley†	78	— 9	33.7	0.00
Ashland*	75	1	.....	0.16
Auburn (1)*†	.....	5	37.7	0.55
Bassett	76	— 6	32.2	0.60
Beatrice†	78	4	36.6	0.02
Brandon	.....	.....	.....	0.20
Burwell*	78	6	34.2	0.30
Creighton†	65	— 5	29.0	0.25
Crete	78	3	35.4	0.25
Culbertson (1)†	.....	.....	.....	0.03
David City*†	68	0	30.3	T.
De Soto	69	— 2	32.8	0.55
Dunning*	68	— 4	34.9	.....
Ericson*†	71	— 2	31.7	0.15
Ewing*†	70	— 5	31.0	0.25
Fairbury*	76	.....	.....	0.02
Fort Niobrara	75	—22	30.3	0.55
Fort Omaha	68	0	35.5	0.49
Fort Robinson	81	—10	33.5	0.57
Fort Sidney	70	.....	.....	0.30
Franklin*	78	— 6	35.0	.....
Fremont*	69	— 1	34.5	0.95
Genoa†	74	1	32.8	0.20
Gering†	79	— 6	35.1	1.12
Grand Island	80	0	36.0	0.30
Hartington†	64	— 9	27.8	0.47
Harvard*	71	0	33.8	T.
Hastings†	76	0	.....	T.
Hay Springs†	78	— 9	30.7	1.21
Hebron	73	5	37.3	0.02
Holdrege	.....	— 4	30.7	.....
Imperial	88	— 8	34.5	.....
Kennedy*	89	— 5	34.7	0.46
Kimball†	78	— 8	29.3	0.10
Lexington*†	78	— 8	36.1	0.05
Lincoln	76	2	35.9	0.16
Long Pine	80	—12	35.0	1.00
Marquette*	76	1	.....	0.16
Mayberry	.....	.....	30.7	0.25
Minden	70	— 4	34.0	0.25
Nebraska City*	76	2	34.2	0.47
Norfolk†	67	— 5	31.0	0.27
North Loup†	76	— 5	34.8	0.22
O'Neill	69	4	31.4	0.35
Plattsmouth†	.....	.....	.....	1.50
Precept*	76	— 7	36.2	T.
Purple Cane*	74	2	35.9	0.25
Ravenna	78	— 5	33.2	0.08
Seward*	78	— 5	36.6	0.55
Springview	79	—10	32.6	0.87
Superior*	88	18	44.8	0.00
Syracuse*	76	6	35.8	0.17
Wallace*	72	— 8	34.5	0.05
Weeping Water*	78	4	35.0	0.12
West Hill*	75	— 4	32.3	0.16
Whitman*	70	— 4	31.3	0.40
Wilcox (1)	.....	— 3	.....	T.
Nevada.				
Aurora*	62	30	47.7	2.41
Austin	65	18	41.5	0.23
Battle Mountain*	72	15	44.5	0.25
Belmont	63	15	40.6	T.
Belleville	62	24	40.1	0.00
Beowawe	69	0	39.6	0.32
Browns*	72	26	46.7	0.00
Candelaria	63	24	45.8	T.
Carlin*	65	2	30.2	0.30
Carson City	75	13	41.6	T.
Cranes Ranch	.....	.....	.....	0.13
Downeyville	73	17	43.4	0.00
Elko (1)	70	4	41.9	0.00
Elko (near)	76	— 2	36.0	0.00
Ely	64	4	24.0	0.30
Eureka	81	9	44.1	0.00
Fenelon*	73	12	46.2	0.02
Genoa	73	18	44.0	0.00
Golconda*	62	16	40.4	0.05
Halleck*	78	0	36.8	0.12
Hawthorne (1)*	79	34	47.6	0.00
Hawthorne (2)	76	22	46.4	0.00
Hot Springs*	69	15	38.3	0.00
Humboldt*	70	18	41.7	0.00
Lewers Ranch	72	21	46.6	0.72
Lovelocks*	68	20	41.5	0.00
Mill City	74	15	43.0	0.05
Monitors Ranch	68	8	38.2	0.00
Palisade*	74	10	41.5	0.00
Palmetto	70	9	41.7	0.00
Pioche	80	18	46.3	0.00
Reno*	74	18	41.7	0.00
Reno State Univ'sy	72	19	43.0	0.05
Saint Clair	70	16	41.1	T.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Nevada—Cont'd.	°	°	°	*Ins.*
Stofiel	59	0	18.8	0.61
Sunnyside c	75	5	38.6	0.00
Tecoma*	70	10	34.4	0.13
Toano	75	10	39.4	0.08
Tybo o	71	14	46.3	0.00
Virginia City	69	27	47.7	0.05
Wabuska	76	18	42.7	T.
Wadsworth	90	14	41.7	0.00
Wells*	72	16	42.3	0.23
Winnemucca*	67	10	39.2	0.40
Younts Ranch	74	31	54.4	0.00
New Hampshire.				
Antrim	.....	.....	.....	2.86
Belmont	.....	.....	.....	2.29
Berlin Falls	60	—12	30.9	... .
Berlin Mills	66	—12	32.2	2.46
Concord (1)	63	4	36.6	1.73
East Canterbury	44	— 5	28.2	1.76
Groveton*	61	—10	33.2	2.66
Hanover (1)	62	— 5	32.9	2.00
Hanover (2)	.....	— 8	36.9	2.08
Lake Village	.....	.....	.....	2.43
Littleton	63	— 9	32.2	2.17
Manchester	65	5	39.0	1.80
Mine Falls	.....	.....	.....	2.19
Nashua	66	4	38.2	2.18
Newton	65	4	37.6	1.91
North Conway	62	1	33.4	1.56
Pennichuck Station	.....	.....	.....	2.11
Plymouth	60	2	31.0	3.26
Stratford	64	—10	34.8	2.62
Walpole	62	3	34.6	2.62
West Milan	66	—12	32.2	2.67
Wiers Bridge	.....	.....	.....	2.20
Wolfborough	.....	.....	.....	1.56
New Jersey.				
Allaire	63	11	42.5	.....
Asbury Park	62	14	42.4	2.35
Bayonne	65	12	42.6	1.97
Belleville	.....	.....	.....	2.87
Belvidere	61	13	38.2	1.63
Beverly†	67	14	41.1	2.40
Blairstown	74	12	39.5	2.49
Bridgeton (1)	67	17	45.0	1.67
Bridgeton (2)	69	18	45.4	1.40
Camden	70	15	43.2	2.21
Cape May C. H.†	67	13	44.2	2.51
Deckerton	63	7	38.6	3.07
Dover	56	8	39.2	3.47
Egg Harbor City	66	13	41.4	2.59
Elizabeth†	62	10	41.8	1.54
Franklinville	63	13	40.2	2.31
Freehold	67	7	42.2	2.24
Gillette	65	12	38.4	2.85
Hanover	61	6	37.6	2.26
Highland Park	65	10	41.3	2.07
Hightstown	68	20	41.3	2.45
Imlaystown	66	12	42.7	2.95
Junction	.....	.....	.....	2.19
Lambertville	67	15	41.7	2.21
Moorestown	70	14	42.0	2.30
Mount Holly	67	16	44.0	3.02
Newark (1)	64	12	43.4	2.44
New Brunswick (1)	69	10	43.0	2.18
New Brunswick (2)	66	12	41.8	2.27
Newton†	63	8	38.0	2.87
Ocean City	79	11	47.4	2.70
Oceanic	67	18	45.5	2.35
Paterson	68	12	41.7	3.04
Plainfield	64	12	41.6	2.62
Rancocas*	.....	.....	.....	2.27
Readington*	64 *d*	16	45.3	.....
Salem	67	16	42.3	1.76
Somerville	68	7	43.4	2.26
South Orange*	64	11	40.4	2.86
Tenafly	79	10	41.2	2.88
Trenton*	68	10	45.0	2.87
Vineland	68	14	43.4	1.79
Whiting	70	11	44.0	2.28
New Mexico.				
Albert†	77	18	46.5	T.
Antelope Springs†	70	12	40.3	0.15
Bernalillo	.....	.....	.....	0.00
Bloomfield†	75	7	43.6	0.00
Chama†	78	8	39.8	0.10
Coolidge†	68	—10	29.7	0.00
Deming	82	27	53.8	0.00
Dulce†	66	6	32.0	0.02
Embudo	.....	.....	.....	T.
Estalina Springs†	83*n*	19*n*	41.6*n*	0.01
Folsom†	86	9	46.5	0.42
Fort Bayard	78	21	49.2	0.06
Fort Stanton	72	12	41.2	0.00
Fort Wingate	76	16	44.4	0.00
Gallinas Spring†	75*d*	18*d*	45.4*d*	0.02
Halls Peak†	84	8	39.9	0.05
Hillsborough†	77	21	49.5	0.00
La Luz	82	15	49.0	T.
Lordsburgh	85	31	50.2	0.00
Los Lunas†	69	18	40.4	0.00
Monero†	65	6	34.0	0.06
Nogal	.....	.....	.....	0.17
Olio†	68	15	42.2	0.00
Pojuaque	.....	.....	.....	T.
Red Cañon†	83	15	46.6	0.00

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
New Mexico—Cont'd	°	°	°	*Ins.*
Socorro†	80	22	50.9	0.00
Springer†	.....	.....	.....	0.00
Taos†	70	9	36.6	0.00
Wallace†	73	16	43.3	T.
New York.				
Adams Centre	.....	.....	.....	3.78
Addison	64	10	37.8	1.64
Afton	.....	.....	.....	3.31
Akron	.....	.....	.....	3.27
Alfred Centre	65	— 1	35.2	1.73
Angelica†	68	— 3	35.3	2.33
Apulia	.....	.....	.....	3.03
Arcade(1)	66	2	34.1	3.10
Au Sable Forks	.....	.....	.....	2.27
Avon	.....	.....	.....	1.50
Baldwinsville	65	10	38.9	2.50
Batavia	.....	.....	.....	1.84
Bedford	.....	.....	.....	4.45
Bethlehem Centre	.....	.....	.....	3.04
Binghamton †	65	12	36.8	2.65
Bloods Depot	.....	.....	.....	1.80
Bolivar	.....	.....	.....	2.69
Boyds Corners*	63	9	40.1	3.86
Brentwood	73	15	43.0	2.00
Brookfield	62	— 3	34.9	2.92
Canton†	70	— 5	35.0	3.06
Carmel	64	6	39.0	3.57
Central Park, N. Y.	64	14	44.3	2.30
Cherry Creek	.....	.....	.....	6.84
Constableville†	60	— 7	30.9	6.47
Cooperstown	62	0	34.9	3.15
Davids Island	65	10	40.8	3.20
De Kalb Junction	.....	.....	.....	4.76
Demster	.....	.....	.....	4.22
Deposit	.....	.....	.....	3.20
Dunkirk (2)	.....	.....	.....	3.04
Easton	.....	.....	.....	3.14
Eden Centre	75	5	38.4	5.08
Factoryville†	66	11	37.8	2.07
Fleming	67	10	37.8	2.23
Fort Columbus	57	13	42.0	2.24
Fort Hamilton	60	13	43.2	1.84
Fort Niagara	71	16	41.8	1.75
Fort Porter	74	5	37.2	1.50
Fort Schuyler	62	13	42.6	2.41
Fort Wadsworth	69	12	43.1	2.33
Galway	.....	.....	.....	2.19
Geneva†	67	13	39.2	1.68
Hammondsport	65	8	39.0	1.20
Hess Road Station†	72	12	39.2	2.80
Honeymead Brook	63	6	36.5	2.10
Humphrey†	68	9	35.9	4.09
Italy Hill	61	7	34.5	.....
Ithaca	65	11	39.4	2.25
Jamestown†*	63	15	36.8	0.84
Kings Station	.....	.....	.....	2.98
Le Roy	66	10	37.4	3.40
Liberty	.....	.....	.....	3.79
Lockport	72	8	38.6	3.19
Lowville	.....	.....	30.7	5.23
Lyndonville	.....	.....	.....	1.57
Lyon Mountain(2)	.....	.....	.....	2.69
McLean	.....	.....	.....	2.86
Madison Barracks	70	— 4	38.6	3.78
Malone	65	— 5	33.4	2.69
Marshland	.....	.....	.....	3.56
Middletown	60	7	38.0	3.66
Minnewaska	57	1	34.6	5.19
Mount Morris	72	4	39.9	2.23
Newark Valley	.....	.....	.....	3.44
New Lisbon*	62	— 1	32.9	2.25
North Hammond*†	66	— 2	37.8	2.33
Number Four†	60	— 9	31.6	4.84
Oxford	60	5	34.5	2.65
Palermo†	65	6	36.5	2.88
Pawling	.....	.....	.....	2.50
Peekskill	74	15	38.3	3.48
Perry City	64	11	36.1	2.19
Plattsburgh	63	0	34.8	1.79
Plattsburgh B'ks	61	— 3	36.2	1.67
Port Jervis	61	9	37.8	3.37
Potsdam	68	— 5	34.6	2.92
Poughkeepsie	63	6	38.7	2.11
Quaker Street	63	1	34.4	2.29
Rome	62	0	37.4	5.54
Romulus	65	12	39.2	1.25
Rondout	58	9	37.6	3.05
Setauket†	63	16	43.0	2.24
Sherman	69	10	35.7	4.60
Schodack Depot	.....	.....	.....	2.78
South Canisteo	65	3	35.3	2.74
Southeast Reserv'r	.....	.....	.....	3.36
South Kortright††	61	0	34.4	2.63
Syracuse*	65	11	39.4	2.53
Turin	60	— 4	33.6	7.03
Utica	63	0	36.8	3.30
Wappingers Falls	.....	.....	.....	2.14
Watervleit Arsenal	63	4	38.2	2.35
Watkins	72	14	41.5	1.55
Wedgwood	68	7	34.2	1.77
West Chasy	.....	.....	.....	1.61
West Point	70	5	39.4	2.83
White Plains*	60	10	41.6	3.22
Willets Point	64	12	42.2	2.52

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean.	Precip'n.
North Carolina.	°	°	°	*Ins.*
Asheville†	73	13	44.3	3.60
Bakersville†	69	9	40.9	2.63
Bryson City†	.....	.....	.....	2.71
Chapel Hill†	80	13	47.0	3.12
Douglas	73	13	42.6	2.40
Fayetteville†	.....	.....	.....	2.52
Goldsborough†	76	20	50.5	1.51
Hendersonville*†	68	14	43.2	8.00
Lenoir*	71*d*	15*d*	42.7*d*	4.50
Lexington	78	16	47.1	2.90
Lillington†	.....	.....	.....	3.49
Linville†	64	5	37.9	10.79
Littleton†	76	15	46.4	2.59
Louisburgh†	72	15	44.2	1.93
Lumberton†	76	22	51.0	2.35
Morganton*†	75	12	45.0	4.75
Mount Airy†	74*i*	10*h*	42.4*i*	2.43
Mount Holly†	.....	.....	.....	2.79
Murphy†	.....	.....	.....	4.18
New Berne†	76	24	49.5	0.77
Oak Ridge†	75	16	45.7	3.33
Pittsborough	76	16	45.8	2.55
Raleigh	79	16	49.0	2.65
Salisbury	74	23	48.6	3.41
Saxon†	78	11	44.6	2.85
Smithfield	76	17	48.6	3.50
Soapstone Mount*	.....	16	42.5	3.50
Southern Pines†	80	14	49.7	2.86
Wadesborough	70	20	47.7	3.15
Wadeville†	76	19	47.2	4.31
Washington	79	24	51.9	2.38
Weldon	77	16	48.1	2.07
Willeyton	77	17	47.8	2.40
North Dakota.				
Bathgate†	60	—20	20.4	0.40
Carrington†	62	—26	21.8	0.67
Dickinson†	71*d*	—14	23.2	0.50
Ellendale†*	62	—10	24.7	0.34
Fargo†	62	—28	20.2	0.46
Fort Buford	68	— 7	23.2	1.27
Fort Pembina	64	—24	17.0	0.80
Fort Yates	68	— 7	26.2	0.95
Gallatin*†	64	—32	.....	0.66
Grand Forks	61	—18	19.2	0.71
Grand Rapids†	65	—30	19.9	1.03
Hope†	63*d*	— 9*f*	22.0*f*	0.30
Lakota†	57	—28	18.0	.....
Minot‡	41	—11	17.2	.....
Napoleon†	58	—19	20.1	1.13
Power †	69	—21	21.5	0.60
Saint Johns†	53	—17	17.6	1.44
Valley City†	62	—28	20.6	0.95
Wild Rice†	.....	.....	18.1	0.67
Willow City†	45	—31	16.6	1.25
Woodbridge†	64	—35	15.4	0.55
Ohio.				
Akron	70	11	38.9	5.06
Ashland	69	10	39.0	6.14
Athens	74	10	40.9	3.45
Bangorville	70	6	37.6	6.79
Bellevue*	68	12	36.5	5.70
Bement	70	10	36.4	5.36
Caledonia†	.....	.....	.....	6.50
Canton†	71	14	39.2	3.93
Celina	66	11	40.5	5.18
Circleville(1)†	.....	.....	.....	3.19
Clarksville	68	13	40.0	5.25
Cleveland	71	14	40.3	4.63
Columbus Barracks	71	14	40.4	6.36
Dayton	66	15	41.4	5.29
Demos	73	11	39.6	2.24
Ellsworth	.....	.....	.....	3.52
Elyria	72	12	39.0	7.38
Findlay	67	7	37.7	5.53
Fostoria	67	11	38.2	5.18
Garrettsville	71	3	36.4	4.67
Georgetown	71	12	41.9	5.64
Granville	71	9	37.9	6.60
Gratiot	72	12	40.2	4.36
Greenfield	69	12	40.5	4.84
Greenville	60	13	38.2	5.88
Hanging Rock	74	11	41.4	3.44
Harbor	.....	.....	40.6	2.10
Hassan	63	10	39.4	5.10
Hiram	70	7	37.3	4.31
Hudson	.....	.....	.....	5.07
Jacksonborough	65	12	40.8	6.30
Kenton†	67	9	37.8	6.10
Logan	75	11	40.3	4.63
Lordstown	71	8	38.0	2.89
Mansfield†	.....	.....	.....	7.10
Marietta(1)†	.....	.....	.....	3.56
Marietta(2)	75	18	43.3	3.36
Marion	67	8	38.3	5.72
McConnelsville	75	11	40.2	3.01
Montpelier	59	0	34.0	5.73
Napoleon†	63	10	38.3	4.74
New Alexandria	75	11	39.9	2.68
New Comerstown	72	11	38.9	4.29
New Holland	71	12	40.5	4.68
North Lewisburgh	66	10	39.4	7.20
Oberlin	72	9	38.5	5.34
O. S. University	70	12	39.6	5.74
Orangeville	69	7	37.7	3.45
Piqua	63	.....	39.0	.....

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Ohio—Con'd.	°	°	°	*Ins.*
Pomeroy	74	10	42.7	1.54
Portsmouth (1)†	.....	.....	.....	4.20
Portsmouth (2)	76	16	43.2	4.20
Sidney†	.....	.....	.....	5.86
Springborough	.....	.....	.....	6.12
Tiffin†	67	12	39.6	6.15
Upper Sandusky	65	12	39.6	5.54
Van Wert	62	8	36.0	6.18
Wapakoneta	65	10	38.1	2.55
Wauseon	63	1	35.4	5.02
Waverly	76	12	41.8	4.25
Waynesville	64	14	.....	6.75
Westerville	69	13	40.0	6.12
West Milton*	90	11	44.3	6.45
Weymouth	73	5	38.0	5.03
Wheeler†	.....	17	38.8	5.02
Wooster†	71	10	37.6	5.73
Youngstown	73	15	40.3	3.16
Zanesville†	.....	.....	.....	3.05
Oklahoma Ter.				
Fort Reno	89	10	48.6	0.85
Fort Sill	88	15	50.6	1.10
Guthrie*†	86	20	50.6	1.26
Oregon.				
Albany(1)†	69	30	48.0	7.32
Albany(2)*	56	30	43.3	.....
Arlington	66	16	45.9	0.49
Ashland (1)	68	24	44.7	1.47
Ashland (2)	74	24	45.8	1.30
Bandon*	65	32	52.0	6.89
Beulah†	64	7	38.0	0.45
Brownsville*	64	35	50.8	1.87
Burns†	66	10	36.8	3.77
Canyon City	67	1	41.6	5.38
Cascade Locks	62	34	50.2	13.25
Comstock*	60	32	48.6	1.64
Corvallis (1)	72	28	47.6	7.35
Corvallis (2)	.....	28	46.6	.....
Deer Island	.....	.....	.....	9.18
East Portland	79	28	.....	4.51
Eola	63	27	47.2	6.93
Eugene	74	32	50.2	4.31
Forest Grove	69	29	47.1	7.12
Gardiner	67	37	51.3	10.29
Grants Pass†	74	25	46.7	2.16
Grass Valley†	68	7	38.8	0.66
Happy Valley	73	11	41.0	0.99
Hardman	70	22	43.3	0.89
Hood River(near)	59	28	45.1	4.55
Hubbard	66	26	47.8	6.74
Jacksonville	71	26	46.0	1.67
John Day Junction	71	22	45.4	0.72
Joseph†	65	2	34.4	3.09
La Fayette*	58	30	43.8	1.88
La Grande†	67	11	41.9	2.75
Lakeview†	68	15	40.6	1.07
Langlois	64	33	48.9	14.53
Leland*	60	28	41.0	.....
Lone Rock	71	10	42.7	0.97
McMinnville (1)†	67	29	47.8	6.75
McMinnville (2)*	58	28	43.5	.....
Monmouth*	60	38	42.0	.....
Mount Angel†	67	30	48.4	7.41
Newberg	68	31	47.6	6.27
New Bridge	71	25	45.0	1.49
Newport	65	38	51.6	10.51
Pendleton	75	16	44.8	1.50
Portland*	58	37	45.8	0.82
Riddles	66	30	45.5	0.31
Roseburgh	64	35	49.8	0.14
Salem	58	32	47.1	1.13
Sheridan	60	29	49.9	2.25
Silver Lake	65	10	38.6	1.50
Silverton	60	26	44.4	2.43
Siskiyou	63	30	45.5	1.70
Sparta	55	6	32.8	2.25
Springfield	61	32	46.0	1.65
The Dalles	64	26	46.4	1.39
Toledo	69	32	52.6	10.81
Vernonia	66	32	47.4	8.90
West Fork	60	35	47.3	1.14
Weston	74	14	43.3	2.71
Pennsylvania.				
Allegheny Arsenal	76	15	40.8	2.60
Altoona	69	12	44.9	1.89
Aqueduct*	66	14	39.9	2.96
Blooming Grove*	60	11	36.2	5.00
Blue Knob	63	.....	34.2	2.29
Brookville†	.....	.....	.....	4.55
Browers Lock	.....	.....	.....	1.36
Carlisle	66	13	38.4	1.70
Clarion(1)†	.....	.....	.....	4.31
Contesville	69	11	40.3	1.78
Confluence†	.....	.....	.....	3.45
Coopersburgh	64	13	39.7	2.27
Corry	70	10	36.2	5.70
Davis Island Dam†	.....	.....	.....	2.82
Driftone	57	8	34.9	4.98
Doylestown	.....	.....	.....	1.87
Du Bois†	.....	.....	.....	4.07
Dyberry†	66	6	34.3	1.85
Easton	62	11	39.0	1.77
Edinborough*	62	13	35.1	.....
Emporium	66	9	38.8	4.01
F'ks of Neshaminy	.....	.....	42.8	2.04

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Pennsylvania—Con.	°	°	°	*Ins.*
Frankford Arsenal	68	14	42.6	1.60
Frederick	.....	.....	.....	1.63
Freeport†	.....	.....	.....	3.29
Girardville	63	12	37.2	5.12
Grampian Hills	60	8	35.2	3.27
Greensborough†	.....	.....	.....	3.24
Hamburgh	63	13	39.8	1.48
Hollidaysburgh	69	9	38.6	2.76
Honesdale	60	8	36.3	1.82
Hulmeville	66	15	41.6	2.02
Huntingdon†	66	12	39.1	2.39
Johnstown†	69	10	40.3	2.54
Kennett Square	.....	.....	40.1	2.29
Kilmer*	62	15	39.5	2.86
Lancaster	64	12	41.8	1.09
Landsdale	.....	.....	.....	1.73
Lebanon	62	13	39.5	2.44
Le Roy†	61	8	36.4	3.24
Ligonier	73	7	41.0	2.93
Lock Haven†	67	10	39.4	2.82
Lock No. 4†	.....	.....	.....	2.70
Mahoning†	.....	.....	.....	4.01
McConnellsburgh	53	13	41.8	3.03
Meadville	70	9	38.8	.....
Meshoppen	.....	.....	.....	4.51
New Castle†	73	13	41.0	3.65
Oil City†	.....	.....	.....	2.85
Ottsville	.....	.....	.....	1.92
Parkers Landing†	.....	.....	.....	3.15
Philadelphia(1)	.....	.....	.....	1.73
Philadelphia(2)	67	15	44.7	2.36
Phœnixville	68	13	41.4	1.69
Point Pleasant	.....	.....	.....	1.95
Pottstown	66	14	42.5	1.58
Quakertown	66	10	38.6	2.31
Reading†	.....	.....	40.1	1.38
Ridgway†	.....	.....	.....	3.90
Salem Corners	64	6	39.1	2.62
Saltsburgh†	.....	.....	.....	2.83
Seisholtzville	.....	.....	.....	2.35
Selins Grove	56	20	39.6	3.85
Smiths Corners	.....	.....	.....	1.72
Somerset	66	7	38.2	2.45
South Eaton	64	13	36.2	2.84
State College	62	9	37.5	2.98
Stoyestown†	.....	.....	.....	2.15
Swarthmore	67	13	41.0	1.62
Uniontown	70	17	42.5	3.65
Warren†	.....	.....	.....	5.79
Wellsborough	64	10	34.6	4.11
West Chester	65	12	41.8	2.29
West Newton†	.....	.....	.....	1.79
Westtown	65	14	42.4	0.92
Wilkes Barre†	66	18	40.4	2.54
Wysox	64	14	37.3	2.73
York	66	10	39.4	2.13
Rhode Island.				
Bristol	61	11	41.5	2.52
Fort Adams	65	18	43.4	1.92
Kingston(1)	62	10	40.2	2.83
Kingston (2)	62	9	40.4	2.99
Lonsdale	.....	.....	.....	2.64
Newport	60	16	43.3	.....
Olneyville	68	13	43.6	.....
Pawtucket	.....	.....	.....	2.40
Providence (1)	66	12	41.6	2.84
Providence (2)	63	9	40.3	2.74
Providence (3)	63	10	39.0	2.95
South Carolina.				
Allendale†	78	26	54.4	2.37
Batesburgh†	80	22	52.5	2.35
Belmont	79	20	49.6	4.56
Blackville†	80	25	53.6	2.18
Branchville†	75	24	53.0	1.63
Brewer Mine	80	19	48.6	2.14
Camden†	.....	.....	.....	1.73
Cheraw (1)†	74	21	46.4	2.27
Cheraw (2)†	.....	.....	.....	2.56
Chester†	77	20	48.2	4.05
Conway	75	25	52.4	0.43
Effingham†	.....	.....	.....	3.17
Evergreen	82	18	50.0	3.35
Florence†	76	24	52.4	2.34
Greenville†	82	15	49.0	4.31
Greenwood†	81	20	50.0	3.08
Hardeeville†	76	30	55.9	1.98
Jacksonborough†	79	28	53.2	1.84
Kingstree†	79	22	51.2	1.55
Nichols†	.....	.....	.....	2.16
Port Royal*†	75	33	55.8	1.64
Saint George†	78	26	53.6	2.20
Saint Matthews†	82	25	54.6	1.84
Simpsonville	82	17	46.7	3.55
Society Hill†	74	21	53.0	2.01
Spartanburg(2)†	78	28	50.0	2.30
Statesburgh†	77	23	51.2	2.01
Tillers Ferry†	.....	.....	.....	2.45
Trial	81	27	53.8	2.49
Walhalla	68	18	48.6	5.25
Wateree†	.....	.....	.....	2.30
Winnsborough†	80	22	51.8	4.07
Yorkville	79	20	49.8	4.43
South Dakota.				
Aberdeen†	65	—21	22.1	1.36
Britton†	65	—27	21.8	0.90

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
S. Dakota—Cont'd.	°	°	°	*Ins.*
Brookings†	62	—29	23.7	0.25
Castlewood†	61	—34	20.4	0.55
Clark†	63	—23	22.5	1.20
Cross *	78	— 3	32.7	0.21
De Smet†	.....	.....	21.7	1.05
Elkton*	56	—28	23.2	0.22
Flandreau†	66	—29	24.2	0.46
Forestburgh†	64	—13	26.9	0.48
Forest City†	.....	—12	31.6	0.75
Fort Meade	76	— 4	35.6	0.52
Fort Randall	69	— 3	31.9	0.42
Fort Sully	76	— 7	27.8	0.33
Gary†	61	—22	23.8	0.45
Howard†	64	—25	24.4	0.64
Kimball†	68	—13	28.2	1.00
Milibank*†	62	—20	24.4	0.40
Mitchell†	65	—12	29.8	0.31
Oelrichs†	80	—10	31.1	0.58
Onida†	72	—13	21.9	0.42
Parker	65	0	29.4	0.45
Parkston*	72	0	30.2	1.20
Saint Lawrence	68	— 6	28.0	0.28
Sioux Falls†	62	—24	24.8	0.60
Spearfish†	79	— 2	34.7	0.75
Tyndall†	65	— 8	30.5	0.57
Watertown	37	—26	.....	0.52
Webster†	68	—33	27.0	2.39
Wentworth	69	—25	23.7	0.38
Wessington Spr'gs†	64	—13	27.3	0.57
Wolsey*†	64	—18	24.2	1.23
Tennessee.				
Andersonville	70	16	45.8	3.44
Arlington†	72	16	45.7	5.02
Ashwood*†	73	18	47.2	5.83
Austin†	72	15	47.8	5.72
Bethel Springs*†	72	20	49.2	5.87
Bolivar(2)†	80	20	51.6	6.11
Brownsville†	79	20	50.1	6.52
Carthage	.....	.....	.....	6.68
Charleston†	.....	.....	.....	5.01
Clarksville	74	14	46.2	5.31
Clinton†	.....	.....	.....	4.47
Columbia†	.....	.....	.....	5.73
Covington(1)†	73	18	47.1	6.62
Covington(2)†	78	20	51.0	8.08
Dyersburgh(2)†	77	16	48.2	11.45
Fayetteville*	74	20	47.8	5.98
Florence Station*	67	19	46.4	5.45
Franklin*	72	15	46.4	6.45
Grand Junction†	78	16	49.5	5.42
Greeneville*	69	16	43.6	2.42
Hohenwald	75	10	.....	5.66
Jacksboro*	75	15	44.9	4.28
Jackson	64	14	.....	6.50
Johnsonville†	.....	.....	.....	5.04
Kingston(1)†	.....	.....	.....	4.40
Kingston Springs*	75	13	42.6	5.60
Loudon†	.....	.....	.....	4.30
Lynnville*	79	14	46.2	7.27
McKenzie*	77	19	49.4	6.54
McMinnville*	74	19	48.4	2.68
Milan†	73	16	48.2	7.37
Missionary Ridge*	.....	20	46.6	.....
Nunnelly*	72	13	46.9	5.40
Parksville*	75	18	47.7	3.48
Riddleton†	75	12	44.8	8.16
Rockwood†	.....	.....	.....	7.00
Rogersville*†	71	16	43.1	2.54
Rugby*	68	12	43.2	4.62
Savannah*	80	15	49.7	3.84
Sharp*	76	16	47.9	6.56
Strawberry Plains†	.....	.....	.....	2.30
Union City*	73	15	41.9	7.63
Waynesborough	70	13	45.5	5.00
Texas.				
Arthur City†	.....	.....	.....	2.00
Austin(1)†	85	37	62.2	1.52
Austin(2)*	83	29	59.0	.....
Austin(3)	84	26	57.3	2.57
Big Spring	.....	.....	.....	0.00
Brady†	85[f]	18[e]	54.2[g]	0.31
Brazoria†	85	31	60.1	2.16
Brenham†	86	26	61.8	3.59
Brownwood†	86	18	53.8	0.25
Burnet*†	82	28	56.2	1.73
Camp Eagle Pass	93	31	59.2	0.42
C'p Peña Colorado	84	2	50.4	0.00
Childress†	84	14	47.8	0.39
College Station	92	28	60.8	4.46
Colorado(3)	.....	.....	.....	0.00
Columbia†	84	30	61.3	1.46
Corsicana(2)†	84	20	53.7	1.41
Cuero(2)	86	29	60.3[f]	0.22
Durham	.....	.....	.....	0.44
Duval*	87	26	59.1	1.35
Fort Bliss	85	26	53.2	T.
Fort Brown	85	29	65.2	0.83
Fort Clark	86	30	60.2	0.30
Fort Hancock	89	17	50.0	0.00
Fort McIntosh	90	32	63.4	0.18
Fredericksburgh*†	84	28	57.1	0.58
Gainesville†	86[d]	16[e]	52.4[g]	0.35
Gallinas†	89	25	58.9	0.54
Graham†	86	14	54.2	0.12
Grapevine†	89	16	54.8	0.25

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Texas—Cont'd.	°	°	°	*Ins.*
Hallettsville*†	90	28	62.5	2.23
Hansford	79	6	40.8	T.
Hartley†	78	9	43.1	0.07
Haskell†	86	29	53.3	0.00
Haymond	.....	.....	.....	T.
Houston†	81	30	59.4	4.61
Huntsville†	82	27	56.8	4.49
Kent	.....	.....	.....	0.33
Liberty*	76	34	61.6	.....
Llano†	88	29	60.4	0.52
Longview†	88	25	56.4	4.49
Menardville*†	85	22	54.2	1.05
Mesquite†	87	19	55.3	0.36
Mountain Springs†	89	15	53.7	0.40
New Braunfels†	84	27[e]	60.6	0.81
New Ulm	90	27	59.3	2.61
Ochiltree	.....	.....	.....	0.18
Paris†	85	12	51.0	2.15
Quanah†	86	16	50.4	0.20
Roby†	84	18	52.4	0.50
Round Rock†	86	26	59.1	3.23
San Antonio(1)	88	32	61.1	0.92
San Antonio(2)	87	32	61.2	0.77
Sierra Blanca(1)†	.....	25	.....	.....
Sierra Blanca(2)	.....	.....	.....	0.00
Silver Falls†	84	12	50.8	0.04
Sugar Land†	85	27	59.2	2.40
Temple†	85	21	55.6	2.00
Tyler	83	25	52.8	1.66
Van Horn	.....	.....	.....	0.00
Venus†	93	13	54.8	0.14
Waco(2)†	86	24	58.2	1.55
Weatherford†	92	15	57.8	0.10
Utah.				
Beaver	78	11	42.6	0.00
Blue Creek*	69	17	42.9	0.00
Castle Gate	67	27	39.1	T.
Cisco	72	10	41.8	T.
Corinne*	65	11	41.0	0.05
Deseret	74	6	37.6	0.00
Fort Douglas	72	17	43.8	1.45
Fort Du Chesne	66	8	36.0	0.00
Green River	74	14	41.8	0.00
Grouse Creek	.....	.....	.....	0.31
Kelton*	62	7	38.0	0.10
Lake Park	65	16	40.2	0.79
Levan	.....	.....	37.1	0.07
Logan	73	13	40.9	0.57
Losee	69	15	43.3	0.00
Moab	73	14	40.5	0.00
Mount Carmel*	75	12	40.0	0.00
Nephi	73	7	38.8	0.26
Ogden(1)	62	14	41.7	0.33
Ogden(2)*	.....	.....	42.8	0.30
Park City	.....	.....	35.7[c]	0.40
Parowan	74	14	43.8	0.00
Promontory*	66	7	39.9	0.00
Provo City†	.....	.....	45.0[h]	T.
Richfield	72	8	39.6	T.
Saint George	80	25	50.6	0.00
Snowville	63	20	43.5	0.38
Soldiers Summit	.....	.....	.....	0.86
Stockton	.....	.....	37.4	0.00
Terrace*	60	24	42.8	0.20
Vermont.				
Brattleborough(1)	62	2	37.2	2.87
Burlington†	66	0	39.2	2.73
Chelsea*	54	— 7	29.6	2.46
Cornwall	.....	.....	.....	2.33
Enosburgh Falls†	65	— 9	35.2	3.25
Hartland†	63	— 6	33.0	2.65
Jacksonville	61	0	31.3	4.10
Lunenburgh	67	— 8	36.4	2.50
Strafford*	56	— 4	34.4	2.05
Vernon*	60	0	38.4	2.80
Weathersfield C'tre	58	— 5	33.5	.....
Virginia.				
Abingdon†	.....	.....	.....	2.26
Bedford City†	66	17	44.6	3.39
Big Stone Gap†	72	12	40.2	3.49
Birdsnest*†	74	21	47.7	2.10
Cape Charles*†	67	24	47.6	1.56
Christiansburgh†	.....	.....	.....	1.86
Clarksville†	.....	.....	.....	3.08
Dale Enterprise†	68	12	41.7	1.82
Danville†	.....	.....	.....	3.14
Fort Monroe	73	16	46.5	0.99
Fort Myer	68	16	43.1	1.90
Lexington†	67	3	41.6	3.01
Marion†	66	15	41.5	1.15
Mossing Ford*†	70	8	43.7	3.22
Petersburgh†	75	13	46.6	1.95
Richmond†	79	8	49.2	2.02
Salem	68	18	45.6	2.65
Spottsville†	74	19	45.2	2.69
Stanardsville†	77	20	48.6	2.68
Staunton†	71	4	40.6	2.20
Woodstock†	.....	.....	.....	1.53
Wytheville†	70	14	41.5	2.90
Washington.				
Aberdeen†	63	34	49.0	19.96
Chehalis†	65	30	47.6	8.53
Coulee City	60	10	36.6	.....
Doe Bay	58	31	46.9	5.32
East Sound†	63	31	47.0	4.68

Meteorological record of voluntary observers, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Washington—Cont'd	°	°	°	*Ins.*
Fort Canby	64	39	50.3	14.25
Fort Simcoe*	64	28	46.4	1.02
Fort Spokane	62	10	35.5	1.53
Fort Townsend	61	28	45.4	3.30
Fort Walla Walla	75	17	44.4	1.55
Madrone†	62	28	48.3	6.20
Moxee Valley	66	17	42.0	0.65
Pomeroy	70	16	43.7	1.23
Tacoma†	68	30	47.4	7.62
Vancouver B'ks	67	29	48.0	6.50
West Virginia.				
Alderson	68	22	46.8	1.13
Bluefield	.....	27	57.4	4.29
Buckhannon(1)†	.....	.....	.....	3.80
Buckhannon(2)†	76	10	41.1	.....
Charleston†	.....	.....	.....	3.78
Elizabeth†	.....	14[d]	.....	3.28
Ella*†	69	12	40.4	3.36
Glenville†	76	13	40.4	4.35
Grafton†	71[h]	12[h]	39.4[h]	2.90
Harpers Ferry†	.....	.....	.....	1.97
Hinton†	.....	.....	.....	2.09
Kingwood*†	67	12	41.2	1.11
Martinsburgh†	69	17	44.4	2.24
Morgantown(1)†	.....	.....	.....	3.68
Morgantown(2)†	80	12	42.3	2.68
Nuttallburgh	78	19	46.8	.....
Parkersburgh†	75	16	42.9	3.37
Piedmont†	65	12	40.3	.....
Pleasant Hill*	68	8	36.8	.....
Point Pleasant†	.....	16	.....	3.44
Romney	70	11	41.2	2.22
Rowlesburgh(1)	.....	.....	.....	4.16
Tannery*	75	10	40.5	.....
Weston†	.....	.....	.....	4.61
Wheeling(1)†	.....	.....	.....	3.26
Wheeling(2)*†	72	18	43.2	2.73
White Sulphur Sp's	.....	.....	.....	2.00
Wisconsin.				
Amherst	57	— 4	30.8	1.54
Appleton(1)†	51	2	29.8	2.06
Baraboo†	52	— 6	28.9	1.96
Barron†	57	—20	25.2	0.70
Bayfield	49	3	28.4	1.68
Beaver Dam	54	2	29.2	2.93
Beloit	54	— 3	30.8	3.08
Berlin	58	0	30.2	1.60
Black River Falls	58	—12	27.1	0.59
Cadiz	.....	.....	28.8	3.52
Centralia	55	— 9	25.9	0.86
Chippewa Falls†	.....	.....	.....	0.56
Columbus	59	— 1	29.6	3.28
Delavan†	53	— 2	31.0	3.15
De Pere	50	2	29.8	2.00
Dodgeville†	52	— 5	27.0	2.91
Eau Claire(1)	59	—15	26.3	0.70
Embarrass*†	54	— 6	28.6	2.40
Florence†	58	— 4	26.4	0.72
Fond du Lac	52	— 1	29.8	2.88
Hammond†	63	—11	28.0	0.50
Harvey†	53	— 1	31.0	3.03
Hillsborough	53	— 5	32.4	1.92
Honey Creek*	52	0	30.3	3.41

Reports received too late to be used in general discussion of weather for November, 1891.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Alabama.				
Claiborne Landing	.....	.....	.....	3.85
Livingston(2)	83	20	52.8	5.37
Marion	81	20	51.4	5.43
Selma(1)	.....	.....	.....	5.60
Thomasville	84	20	52.4	5.11
Tuscumbia(2)	78	17	49.9	5.43
Arizona.				
Antelope Valley	.....	.....	.....	T.
Chiricahua M't's	.....	.....	.....	0.00
Farleys Camp	80	36	58.6	0.00
Peach Springs	65	12	38.1	0.00
Reynert	90	38	64.0	0.00
Walnut Grove†	.....	.....	.....	0.00
Connecticut.				
Newington	.....	.....	.....	3.14
Florida.				
Amelia	76	38	59.4	2.20
Idaho.				
Era	63	— 6	33.1	0.38
Kootenai	56[e]	4[e]	35.0[e]	2.67
Iowa.				
Amana†	58	—13	30.8	2.86
Ames(2)	63	—19	29.2	0.85
Atlantic†	70	— 8	30.0	0.77
Bancroft†	60	—19	26.9	0.57
Belle Plaine	58	—13	30.4	2.07
Blakeville*	70	—16	31.0	2.29
Blockton†	70	— 5	32.2	0.92
Bonaparte*	64	— 6	36.7	3.62
Cedar Falls†	58	—16	29.0	1.68
Cedar Rapids†	60	—12	31.6	2.98
Charles City†	62	—18	26.9	1.40
Clarinda*†	69	2	34.4	1.20
Clinton	57	—18	31.2	2.81
College Springs*†	70	5	40.5	1.09

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Iowa—Cont'd.	°	°	°	*Ins.*
Corning(1)	.....	.....	.....	1.31
Corning(2)†	71	— 8	32.0	1.20
Corydon	68	— 5	32.6	2.24
Cresco†	58	—12	26.5	1.01
Dallas*	.....	—12	27.4	0.40
Delaware*	.....	—19	29.0	2.69
Denison†	63	— 9	31.8	0.99
Eagle Grove	.....	—20	24.4	0.80
Elkader†	58	—18	29.7	1.23
Fayette†	59	—20	28.3	2.61
Fontanelle	.....	.....	.....	0.38
Fort Madison*†	59	2	36.9	2.36
Galva†	76	—12	31.4	0.93
Glenwood(1)†	84	— 2	36.8	0.00
Grand Meadow*	56	— 7	29.2	1.44
Greenfield	71	— 8	30.5	1.38
Grinnell†	59	—10	31.4	1.18
Grundy Centre*	57	—11	29.7	1.30
Hampton*	59	—15	26.9	1.19
Hopeville†	66	— 5	30.9	1.05
Independence*†	53	—15	29.5	1.37
Iowa City†	60	—10	31.8	2.93
Keosauqua†	66	0	34.7	2.90
Larrabee*†	63	—24	26.1	0.67
Logan†	67	— 3	34.7	0.60
McCausland*	53	—12	31.3	2.97
Maquoketa*	60	—12	32.0	3.64
Marshalltown†	.....	—11[k]	24.0[k]	1.39
Maxon*	62	—10	32.9	3.30
Monticello†	57	—16	29.9	2.55
Mooar	65	— 1	34.0	3.08
Mount Pleasant(2)	.....	.....	.....	2.00
Mount Vernon*	56	—14	31.8	1.03
Osage*†	.....	—16	24.8	0.53
Oskaloosa(1)†	65	— 9	33.6	2.40

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Wisconsin—Cont'd.	°	°	°	*Ins.*
Janesville	57	0	31.8	2.70
Juneau†	53	— 1	29.7	2.78
Kenosha	68	4	36.4	4.51
Koepenick*†	54	— 8	28.8	0.50
Lincoln	.....	.....	31.2	.....
Madison	58	— 1	30.0	3.31
Manitowoc	56	— 2	33.4	2.20
Maustond	50†	8†	20.0†	.....
Meadow Valley†	64	—12	29.2	1.17
Medford(1)†	.....	.....	.....	0.48
Medford(2)†	59	—14	25.9	0.41
Menomonie	60	—12	25.8	0.52
Neillsville†	55	—13	26.5	0.67
Oconomowoc†	53	0	31.7	2.36
Oconto	53	2	30.7	1.88
Osceola Mills†	58	—22	24.9	1.22
Oshkosh†	56	1	31.0	2.30
Peshtigo	52	4	29.8	2.41
Phillips†	.....	.....	.....	0.00
Plover†	60	— 9	24.4	2.45
Portage(1)†	.....	.....	.....	1.82
Prairie du Chien	65	— 1	30.9	0.96
Rhinelander	55	— 7	24.8	0.87
Shawano	55	0	29.8	1.55
Shell Lake	54[m]	—13	23.2	0.46
Sparta(1)†	55	— 8	28.6	0.97
Sparta(2)	62	—11	30.2	1.24
Viroqua†	55	— 7	28.2	1.73
Waukesha†	.....	.....	.....	3.21
Watertown	52	0	30.4	2.75
Westfield†	52	— 4	29.1	1.68
Weston*†	.....	— 9	23.9	0.83
Whitehall†	61	—15	28.1	0.37
Wyoming.				
Camp Pilot Butte	68	6	31.7	0.10
Casper†	80	— 7	39.8	0.80
Evanston	72	8	34.9	0.70
Fort D. A. Russell	76	—10	31.0	0.03
Fort Fetterman†	76	—14	32.4	0.05
Fort Laramie†	75	— 7	34.6	0.32
Fort McKinney	75	—13	34.2	1.65
Fort Washakie	69	—12	31.2	0.46
Fort Yellowstone	60	—16	27.4	2.00
Lander	80	—14	34.4	0.39
Laramie(2)	66	—10	28.8	1.10
Lusk†	74	— 4[e]	32.0	0.30
Saratoga†	66	—10	29.3	0.16
Sheridan	.....	—24	24.9	0.92
Sundance	73	—10	29.2	1.16
Wheatland†	80	0	31.8	0.60
Mexico.				
La Logia	87	50	71.9	0.30
Leon de Aldamas	77	35	59.0	T.
Mazatlan	85	65	75.6	0.00
Mexico	73	41	56.8	0.00
Puebla	73	43	59.9	0.00
Vera Cruz	83	64	75.0	1.77
New Brunswick.				
Saint John	56	8	37.1	3.74
West Indies.				
Grand Turk Island	.....	.....	.....	3.58
Hamilton, Bermuda	75	60	68.3	0.09
Havana	89	63	74.5	1.93

Reports received too late, &c.—Continued.

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Iowa—Cont'd.	°	°	°	*Ins.*
Panama†	66	— 6	31.0	0.59
Richland*	.....	—12	29.5	3.54
Sanborn*	64	—24	26.8	0.25
Storm Lake†	61	—16	28.4	0.72
Tipton†	60	—13	32.2	3.43
Vinton*	56	—14	29.9	1.35
Washington	60	— 9	34.4	3.07
Webster City*	63	—12	27.7	2.68
West Bend	67	—17	27.2	0.74
Williams*	57	—18	23.5	0.95
Windsor	.....	.....	.....	1.29
Winterset†	66	— 5	31.7	0.88
Kansas.				
Norton	73	— 2	37.8	0.37
Phillipsburgh†	80	10	40.9	0.00
Shields	83	— 1	42.4	0.10
Tribune	77	5	35.9	T.
Louisiana.				
Sugar Exp. Station	79	29	57.3	4.35

Stations.	Temperature. (Fahrenheit.) Max.	Min.	Mean	Precip'n.
Maine.	°	°	°	*Ins.*
Petit Menan	56	30	38.9	.....
Montana.				
Boulder Valley†	66	— 9	31.3	0.27
Choteau†	71	—16	31.4	0.70
Glendive†	67	— 6	28.4	0.30
Martinsdale	64	—13	31.6	1.28
Powder River	75	—19	33.5	0.57
Virginia City†	64	—10	32.0	0.12
Nebraska.				
Ough (2)†	.....	.....	.....	T.
Pennsylvania.				
Pleasant Mount	.....	.....	32.9	3.11
Texas.				
Cuero (1)	84	34	63.6	0.00
Dallas (2)†	83	36	59.8	0.21
Hearne†	84	22	56.8	2.75
Washington.				
Chelan†	62	22	39.6	1.52
Waterville	55	8	35.4	0.88

Received too late for publication in October, 1891.

Alaska.				
Killisnoo	54	36	40.2	7.95
Arizona.				
Crittenden	.....	.....	.....	0.00
New River	92	52	73.6	0.00
California.				
Campo	81	.....	.....	0.00
Redlands	.....	.....	.....	0.00
Kansas.				
Burr Oak	82	24	.....	7.50
Coldwater†	89	31	57.9	2.77
La Crosse	80	31	55.8	6.40
Pauline	87	31	59.0	1.20
Shields	85	30	55.6	0.78
Tribune	81	26	52.3	0.16
Mississippi.				
Booneville	88	39	60.0	0.82
Palo Alto	88	35	60.1	0.10
Pontotoc	87	31	57.2	0.61

Missouri.				
Marshall (2)	89*f*	30*f*	54.0*f*	1.29
Nebraska.				
Brandon	.....	.....	.....	0.40
Fairfield	82	26	49.3	3.67
Oakdale	83	23	48.9	1.05
Seward	82	30	49.1	3.54
North Carolina.				
Raleigh	90	30	57.0	2.10
Washington	93	32	61.0	4.59
North Dakota.				
Steele	83	19	45.7	1.83
South Dakota.				
Parkston*	84	24	49.0	0.65
Texas.				
Cuero (1)	88	40	68.3	0.42
Ochiltree	.....	.....	.....	3.50
Tyler	86	32	63.6	.....
Washington.				
Lapush	65	30	46.1	4.62

Letters of the alphabet denote the number of days missing from the record, thus: the letter *c* indicates three days missing, etc., etc.
*Extremes of temperature from observed readings.
† Weather Bureau instruments.

Corrections, October, 1891: California, "Alcade" should read "Alcalde;" Hornbrook, make mean temperature 55.8. Michigan, "East Twas" should read "East Tawas." New York, "Lyndsville" should read "Lyndonville."

Data from Canadian stations for the month of November, 1891.

Station.	Pressure. Mean not reduced.	Mean reduced.	Departure from normal.	Temperature. Mean.	Departure from normal.	Precipitation. Total.	Departure from normal.	Prevailing direction of wind.
	Inches.	*Inches.*	*Inches.*	°	°	*Inches.*	*Inches.*	
Saint Johns, N. F.	29.97	30.12	.....	38.3	+ 1.3	3.93	.....	w.
Sydney, N. S	30.04	30.10	+ .04	38.4	+ 0.9	1.55	— 4.06	sw.
Anticosti, Gulf of St. L.	.....	.....	.....	.....	.....	.....	.....	.....
Halifax, N. S.	30.00	30.13	+ .11	38.0	0.0	2.36	— 2.86	sw.
Grand Manan, N. B	30.06	30.11	.....	39.2	.....	2.80	— 1.43	sw.
Yarmouth, N. S.	30.04	30.12	+ .08	39.4	— 0.6	1.66	— 1.28	n.
Saint Andrews, N. B.	30.04	30.09	.....	36.9	.....	3.16	— 0.06	nw.
Charlottetown, P. E. I.	30.06	30.10	.....	36.9	.....	0.50	— 3.23	w.
Chatham, N. B.	30.05	30.07	+ .08	31.8	+ 1.3	2.45	— 0.97	sw.
Father Point, Que.	29.99	30.02	+ .04	31.5	+ 2.5	1.89	— 0.57	sw.
Quebec, Que	29.75	30.09	+ .07	30.5	+ 1.5	4.30	+ 0.28	w.
Montreal, Que	29.86	30.08	+ .05	33.5	+ 1.0	3.06	— 0.11	sw.
Rockliffe, Ont	29.50	29.98	— .04	29.2	+ 0.2	3.95	+ 1.30	o.
Kingston, Ont	29.74	30.06	.00	36.2	+ 0.7	2.70	— 0.72	s.
Toronto, Ont	29.66	30.05	— .01	36.0	— 0.5	3.56	+ 0.61	nw.
White River, Ont.	28.58	30.00	.....	19.8	.....	0.97	.....	w.
Port Stanley, Ont.	29.41	30.07	.....	37.0	.....	5.36	+ 2.21	w.
Saugeen, Ont	29.28	30.02	.00	36.0	+ 0.5	7.09	+ 3.19	s.
Parry Sound, Ont	29.29	30.01	— .01	33.0	+ 1.0	7.88	+ 3.67	se.
Port Arthur, Ont	29.24	29.98	— .04	22.5	— 2.0	0.75	— 1.23	w.
Winnipeg, Man	29.14	30.03	— .05	14.4	— 3.6	1.18	+ 0.19	s.
Minnedosa, Man	28.08	29.99	— .05	13.2	— 3.3	0.53	— 0.43	nw.
Qu'Appelle, Assiniboia	27.62	30.00	— .03	15.8	— 3.7	0.90	+ 0.33	s.
Medicine Hat, Assiniboia	27.56	29.96	— .08	25.1	— 1.9	0.30	— 0.14	w.
Swift Current, Assiniboia	27.31	30.02	— .04	20.2	— 1.8	1.32	.....	nw.
Calgary, Alberta	26.29	29.96	— .08	23.2	— 2.8	0.20	.....	n.
Prince Albert, Saskatch'n	28.39	30.10	.....	11.0	.....	0.55	.....	e.
Esquimalt, B. C.	.....	30.03	— .16	45.8	+ 0.4	7.19	+ 5.45	n.
Stony Mountain, Man	.....	29.93	— .06	16.3	— 4.8	.....	.....	s.
Port Moody, B. C	.....	29.97	— .08	42.8	+ 0.8	13.91	+ 5.26	w.
St. Albans, Man.	28.69	.....	— .09	16.7	— 7.7	1.05	+ 0.59	.....
Edmonton, Alberta	27.53	29.97	.....	22.0	.....	0.31	.....	nw.
Battleford, Saskatchewan	28.13	29.97	.....	13.3	.....	0.11	.....	se.
Grindstone, Gulf St. L.	30.02	30.05	.....	35.0	.....	1.84	.....	nw.
Hamilton, Bermuda	29.92	30.08	.....	68.2	.....	4.89	.....	n.

Table of miscellaneous meteorological data for November, 1891—Weather Bureau observations.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches. Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Temperature of the air, in degrees Fahrenheit. Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Humidity and precipitation. Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01 or more.	Wind. Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Direction.	Date.	Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station. Highest for month.	Year.	Lowest for month.	Year.
New England.						40.8	— 0.5										2.45	— 1.9														
Eastport	53	19	30.04	30.10	+ .13	38.4	+ 1.0	58	11	44	7	30	33	22	29	72	2.31	— 2.3	10	7,407	sw.	38	e.	27	7	14	9	5.7	39.8	1889	29.0	1873
Portland	99	20	30.02	30.13	+ .12	38.0	+ 2.9	66	12	45	6	30	31	23	29	73	2.38	— 1.8	8	6,542	n.	46	s.	17	10	8	12	5.5	43.2	1877	28.9	1873
Manchester	247	5	29.87	30.16	.....	38.0	.....	68	17	47	6	30	29	36	27	71	1.74	.....	8	4,437	nw.	26	w.	1	14	8	8	4.5	41.0	1889	36.6	1890
Northfield	872	5	29.17	30.14	.....	32.6	.....	62	17	43	—14	30	24	36	24	75	2.14	.....	10	7,630	s.	45	s.	23	6	10	14	6.3	35.8	1889	31.6	1890
Boston	125	22	30.03	30.17	+ .14	41.4	— 1.3	66	17	48	9	30	35	26	31	70	2.35	— 2.4	9	8,733	w.	48	s.	17	13	6	11	4.7	44.6	1888	32.8	1873
Nantucket	14	6	30.15	30.16	.....	43.7	.....	60	12	48	24	30	37	24	37	76	1.02	.....	12	9,818	n.	54	ne.	7	12	6	11	4.7	43.7	1888	43.7	1891
Woods Holl	22	14	.....	.....	.....	42.9	.....	62	12	54	21	30	38	18	.....	.....	1.65	— 3.4	13	12,105	nw.	49	se.	23	10	6	14	6.1	46.9	1881	38.0	1873
Vineyard Haven	.....	6	.....	.....	.....	45.7	.....	66	12	51	19	30	39	18	.....	.....	1.28	.....	8	.....	sw.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Block Island	27	12	30.14	30.17	+ .11	43.4	— 2.3	62	17	51	11	30	34	34	38	83	2.89	— 1.0	10	13,459	ne.	63	ne.	7	10	10	10	5.6	47.8	1881	42.7	1882
Narragansett Pier	22	10	.....	.....	.....	42.6	— 0.4	62	17	49	9	30	33	26	32	74	2.49	— 1.4	7	.....	sw.	.....	.....	.....	.....	.....	.....	.....	45.2	1885	39.9	1882
New Haven	107	19	30.04	30.16	+ .09	40.8	— 1.1	62	12	49	10	30	34	24	33	77	2.21	— 1.8	8	7,011	n.	39	se.	23	9	11	10	5.7	45.8	1889	33.7	1873
New London	47	21	30.11	30.16	+ .10	41.2	— 2.5	61	17	48	10	30	34	24	33	77	3.37	— 0.8	12	6,725	n.	46	se.	23	8	8	13	5.2	44.0	1883	31.8	1875
Mid. Atlantic States.						44.8	— 2.4										1.87	— 1.4														
Albany	85	18	30.06	30.16	+ .09	38.8	— 1.8	64	17	46	6	30	31	30	30	77	2.40	— 0.7	11	5,913	s.	40	se.	23	8	13	9	5.2	44.0	1870	37.3	1873
New York, N. Y	185	22	29.97	30.17	+ .09	43.8	— 1.9	64	17	50	10	30	33	23	30	75	2.06	— 1.6	9	8,970	nw.	47	se.	23	10	8	12	5.7	48.3	1888	41.1	1891
Harrisburg	377	4	29.77	30.19	.....	41.1	.....	66	12	52	15	30	32	27	34	72	1.95	.....	12	5,456	w.	54	se.	23	8	13	9	5.2	43.6	1888	41.1	1891
Philadelphia	117	21	30.07	30.20	+ .09	44.2	— 2.0	66	10	52	14	30	37	22	37	80	1.70	— 1.5	9	8,247	nw.	42	s.	23	11	10	9	5.3	48.0	1877	38.0	1873
Atlantic City	53	18	30.14	30.19	+ .09	43.6	— 2.3	60	11	50	15	30	37	27	34	72	2.24	— 1.3	10	9,131	nw.	44	se.	23	12	10	8	4.6	48.8	1881	40.5	1875
New Brunswick	.....	.....	.....	.....	.....	41.3	.....	65	12	52	10	30	37	27	37	80	2.07	.....	8	.....	nw.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Baltimore	179	21	30.00	30.20	+ .08	44.2	— 2.9	64	12	52	17	30	34	32	32	73	1.33	— 1.8	11	5,937	nw.	48	s.	23	12	12	6	4.4	49.1	1881	40.6	1873
Washington, D. C	112	22	30.08	30.20	+ .07	44.0	— 2.4	68	10	54	17	30	33	33	34	75	1.47	— 1.4	8	4,665	nw.	54	sw.	23	12	7	11	5.1	48.0	1890	40.2	1880
Cape Henry	68	21	29.45	30.21	+ .07	49.9	— 2.2	71	10	55	16	30	34	35	33	74	1.13	— 2.8	9	.....	ne.	.....	.....	.....	.....	.....	.....	.....	56.0	1881	48.9	1880
Lynchburgh	.....	18	.....	.....	.....	44.6	— 3.6	69	1	57	23	30	43	28	39	74	2.35	— 0.8	10	3,013	nw.	32	se.	23	14	7	10	4.7	48.4	1881	40.8	1872
Norfolk	43	21	30.15	30.19	+ .07	49.8	— 2.4	74									2.11	— 1.0	10	6,547	n.	40	sw.	23		6	10	4.4	55.0	1881	46.0	1872
S. Atlantic States.						53.5	— 3.0										2.21	— 1.1														
Charlotte	773	14	29.36	30.20	+ .06	47.8	— 3.6	78	1	57	19	30	38	28	35	69	3.05	— 0.2	10	5,280	ne.	48	sw.	23	16	5	9	4.2	55.4	1890	45.1	1980
Hatteras	11	11	30.18	30.20	+ .09	53.5	— 2.7	70	23	58	28	30	38	21	47	78	3.14	— 2.0	12	12,053	n.	50	n.	29	9	8	12	5.8	59.9	1881	52.3	1882
Kitty Hawk	9	17	30.16	30.17	.....	51.2	— 2.5	71	1	57	17	30	38	34	39	87	2.23	— 2.2	11	12,661	ne.	53	ne.	29	9	8	13	*5.7	57.9	1888	50.4	1882
Raleigh	388	5	29.78	30.21	.....	47.7	.....	76	1	57	25	30	44	29	47	76	3.71	.....	7	4,551	n.	36	sw.	23	16	3	11	4.3	53.8	1890	46.2	1887
Southport	34	17	30.16	30.19	.....	52.3	— 2.1	72	1	62	25	30	43	32	43	81	2.08	— 0.9	7	6,566	n.	34	s.	10	13	11	6	4.4	58.0	1881	51.0	1882
Wilmington	78	21	30.11	30.20	+ .07	52.8	— 3.4	78	1	64	30	30	48	24	48	81	1.46	— 1.1	9	6,127	ne.	36	s.	10	13	9	8	4.3	62.2	1890	53.5	1880
Charleston	52	21	30.14	30.19	+ .06	56.2	— 2.7	80	1	64	22	30	41	32	.....	.....	1.77	— 1.5	8	5,819	ne.	36	nw.	18	12	12	6	4.0	58.8	1890	52.1	1891
Columbia	.....	5	.....	.....	.....	52.4	— 3.0	81	1	63	26	30	42	37	42	77	2.56	— 0.8	10	.....	ne.	.....	.....	.....	.....	.....	.....	.....	57.8	1890	49.2	1872
Augusta	209	20	29.99	30.22	+ .06	55.6	— 3.6	79	1	65	30	30	47	26	47	80	2.05	— 0.1	10	5,054	ne.	28	sw.	23	16	8	7	4.1	61.5	1890	53.3	1872
Savannah	87	21	30.10	30.20	+ .05	60.0	— 3.2	80	2	69	33	30	51	29	51	80	1.53	— 1.1	9	4,900	n.	28	.....	10	6	11	11	5.6	65.6	*	56.5	1872
Jacksonville	43	21	30.12	30.18	+ .06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida Peninsula.						70.7	.....	82	23	77	46	30	64	23	64	83	2.16	.....	10	8,606	ne.	42	nw.	18	10	16	4	5.0	73.7	1890	70.7	1891
Jupiter	28	4	30.07	30.10	.....	73.0	— 1.2	81	*	76	46	30	60	26	66	78	2.02	— 0.6	4	8,628	ne.	37	ne.	19	11	14	5	4.6	78.5	1880	71.6	1885
Key West	.....	22	30.08	30.10	+ .04	67.8	.....	81	16	76	40	30	55	27	.....	.....	1.20	.....	6	.....	n.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Micco	.....	.....	.....	.....	.....	65.1	.....	82	17	75	34	30	59	25	58	82	1.99	.....	6	4,025	nw.	24	n.	18	17	9	4	4.2	69.0	1890	65.4	1887
Tampa	36	.....	30.11	30.15	.....	65.9	.....	79	29	73	41	30	59	25	58	82	2.12	.....	7	9,210	nw.	48	n.	18	17	9	4	4.2	69.0	1890	65.4	1887
Titusville	44	5	30.10	30.14	.....	68.9	— 2.3										3.34	+ 0.9														
Eastern Gulf States.						48.8	— 3.6	75	1	58	18	18	40	27	37	71	3.26	— 0.8	9	7,757	se.	36	nw.	17	15	5	5	4.5	57.6	1890	47.7	1880
Atlanta	1,131	14	28.97	30.18	+ .02	58.8	— 1.6	80	1	67	29	30	51	22	49	76	3.88	— 0.5	7	7,359	ne.	46	w.	17	18	8	4	2.8	62.8	1890	49.2	1891
Pensacola	56	13	30.09	30.15	+ .02	49.2	.....	78	1	64	28	30	48	28	48	81	3.55	.....	7	.....	e.	.....	.....	.....	.....	10	10	8	4.7	62.2	1875	54.0	1872
Auburn	.....	11	.....	.....	.....	57.2	— 1.5	82	1	63	28	30	48	34	41	66	7.60	+ 3.5	12	6,153	n.	33	nw.	17	12	10	8	4.5	60.1	1890	53.5	1880
Mobile	35	21	30.12	30.16	+ .02	54.4	— 2.3	82	1	63	21	30	42	39	42	78	3.32	— 0.3	7	4,254	n.	24	nw.	17	15	8	7	4.9	.....	1890	46.4	1880
Montgomery †	217	20	29.93	30.17	+ .01	52.1	.....	82	1	64	22	30	45	28	43	74	6.80	.....	8	4,736	nw.	28	nw.	17	15	8	8	3.7	60.4	1890	50.6	1891
Meridian	358	.....	29.79	30.18	.....	54.6	— 2.8	82	1	64	16	30	40	36	.....	.....	8.66	+ 3.7	10	5,633	w.	42	w.	22	18	4	8	.....	56.4	1890	50.6	1891
Vicksburg	254	21	29.85	30.12	+ .04	50.6	.....	79	1	62	30	30	52	24	51	80	5.03	.....	10	.....	n.	.....	.....	.....	.....	2	27	1	.....	.....	.....	.....
University	.....	5	.....	.....	.....	59.9	— 1.8	80	*	68	30	30	59	21	.....	.....	3.31	— 1.2	10	7,124	ne.	36	n.	17	15	3	12	5.1	65.5	1875	56.3	1880
New Orleans	54	21	30.09	30.15	+ .03	64.6	.....	78	1	70	41	30	59	21	.....	.....	4.27	.....	6	.....	sw.	.....	.....	.....	.....	5	17	8	.....	.....	.....	.....	.....
Port Eads	.....	.....	.....	.....	.....	55.2	— 1.7										5.81	— 0.4														
Western Gulf States.						54.4	— 2.3	85	5	65	25	30	44	33	44	75	3.76	— 1.1	9	5,443	s.	31	nw.	16	16	8	6	4.0	60.3	1879	46.6	1880
Shreveport	249	21	29.85	30.11	— .03	47.6	— 3.8	85	5	58	19	29	40	38	37	73	5.35	+ 1.7	12	5,762	se.	24	n.	28	12	7	11	4.8	53.6	1890	46.0	1889
Fort Smith	492	10	29.60	30.13	+ .01	49.0	— 3.7	82	4	58	20	30	37	37	37	69	5.32	— 0.2	8	4,426	se.	30	nw.	16	10	8	12	5.5	56.4	1879	46.1	1880
Little Rock	309	13	29.80	30.13	— .01	64.2	.....	86	8	71	34	30	57	31	55	74	2.53	.....	7	8,368	se.	48	nw.	8	13	9	6	4.4	64.2	1891	60.1	1889
Corpus Christi	20	5	30.09	30.11	.....	62.6	— 1.1	79	5	68	36	18	46	32	43	75	3.44	— 1.2	11	8,826	se.	40	nw.	17	19	6	5	3.9	66.5	1879	54.1	1889
Galveston	44	21	30.10	30.14	+ .02	56.2	— 1.2	86	5	66	26	18	50	42	42	59	4.09	— 0.5	7	4,802	nw.	24	nw.	17	15	8	8	5.0	59.7	1883	51.2	1889
Palestine	511	10	29.57	30.13	— .02	61.1	+ 2.1	88	7	72	32	18	50	42	42	59	0.92	— 1.2	4	5,203	se.	37	n.	17	15	8	8	3.6	65.4	1879	48.6	1880
San Antonio	705	13	29.40	30.15	+ .02	66.6	— 0.4										0.45	— 1.2														
Rio Grande Valley.						66.9	— 0.6	84	28	76	39	17	57	34	60	90	0.82	— 1.4	11	3,559	s.	36	n.	9	14	8	8	4.4	70.0	1879	56.3	1880
Brownsville	57	16	30.04	30.10	— .00	66.2	— 0.2	91	8	78	33	23	54	48	48	62	0.08	— 0.9	1	5,185	se.	36	n.	17	17	4	9	4.0	68.3	1883	54.5	1880
Rio Grande City	170	14	29.89	30.07	— .04	44.6	— 2.7										1.82	+ 1.0														
Ohio Val. & Tenn.						48.8	— 2.4	72	1	58	18	18	40	32	36	70	4.49	+ 0.2	9	4,613	s.	34	sw.	23	9	10	11	5.8	55.8	1890	45.0	1880
Chattanooga	783	13	29.35	30.20	+ .04	46.7	— 1.7	75	9	75	20	30	38	28	33	66	3.01	— 1.1	8	3,825	n.	38	sw.	23	10	13	7	4.8	52.4	1890	40.0	1872
Knoxville	980	21	29.13	30.19	+ .01	49.2	— 3.2	75	7	58	17	30	39	30	40	78	3.01	— 0.0	10	5,455	se.	36	nw.	22	13	11	4	5.6	53.6	1890	40.9	1880
Memphis	339	21	29.80	30.16	+ .02	47.0	— 3.2	73	9	55	14	30	35	27	34	67	4.79	— 0.0	10	5,180	se.	36	sw.	23	11	10	10	7.8	48.6	1890	38.2	1872
Nashville	553	21	29.55	30.14	+ .01	43.2	.....	74	15	53	15	30	34	32	31	71	6.71	+ 2.8	9	10,742	s.	60	sw.	23	3	9	9	7.3	52.0	1890	37.2	1880
Lexington	.....	9	28.99	.....	.....	44.4	— 3.7	71	*	49	16	18	36	28	34	78	5.35	.....	12	6,493	se.	35	w.	17	5	8	16	7.0	46.5	1890	31.2	1880
Louisville	551	21	29.54	30.14	+ .01	39.4	— 3.0	65	9	48	13	18	35	26	32	75	6.23	+ 2.2	14	6,619	se.	28	w.	17	5	8	17	6.7	48.5	1883	37.7	1880
Indianapolis	766	21	29.27	30.11	+ .00	42.6	— 3.3	71	9	49	16	18	36	28	34	75	5.08	+ 1.3	14	4,986	nw.	28	w.	10	5	8	20	7.4	44.6	1890	33.4	1880
Cincinnati	628	21	29.45	30.14	+ .02	40.3	— 2.1	70	9	50	16	18	35	32	30	72	5.03	+ 1.0	15	6,567	se.	42	sw.	10	3	7	20	7.8	46.6	1883	35.3	1873
Columbus	837	14	29.22	30.15	+ .04	42.3	— 2.1	76	9	52	15	18	33	32	30	76	5.44	+ 2.2	15	5,005	sw.	37	se.	28	w.	17	3	16	11	6.8	45.8	1890	42.2	1891
Pittsburg	847	21	29.21	30.15	+ .04	42.2	.....	75	9	52	15	18	33	32	33	66	2.61	0.0	14	5,020	s.	37	w.	17	3	16	11	6.8	45.8	1890	42.2	1891
Parkersburgh	638	4	29.47	30.18	.....	48.9	— 1.8										3.46	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lower Lake Region.						39.4	— 0.5	70	9	46	10	29	33	30	28	67	1.11	+ 0.9														
Buffalo	690	21	29.30	30.06	+ .02	38.6	— 0.3	68	9	45	11	29	33	32	30	72	3.13	— 0.5	14	10,815	se.	66	sw.	24	0	7	23	8.2	43.5	1883	30.3	1873
Oswego	335	22	29.71	30.09	+ .04	39.8	+ 0.9	72	9	46	18	30	34	24	30	73	2.66	— 0.7	16	10,577	s.	42	w.	17	4	5	16	7.2	40.6	1877	32.0	1873
Rochester	523	22	29.51	30.09	+ .04	40.0	— 2.2	73	9	46	15	30	34	25	31	71	2.46	— 0.5	17	6,702	sw.	44	sw.	17	2	6	22	7.8	43.8	1883	34.4	1880
Erie	714	19	29.29	30.06	+ .01	39.6	— 1.6	71	9	45	13	30	33	29	32	76	3.99	— 0.4	20	11,545	s.	54	w.	23	2	5	23	8.5	43.4	*	31.6	1880
Cleveland	751	22	29.28	30.11	+ .03	39.9	— 2.3	73	9	47	13	30	34	25	32	76	5.41	+ 2.6	17	6,862	se.	41	se.	10	2	1	20	8.1	44.1	*	32.9	1880
Sandusky	639	15	29.40	30.09	+ .02	37.2	— 4.0	67	9	43	11	30	31	22	29	72	5.45	+ 2.5	14	7,129	sw.	35	nw.	23	5	9	16	7.0	44.2	1883	33.7	*
Toledo	674	21	29.37	30.11	+ .05	36.5	— 4.6	64	9	42	10	29	31	20	30	76	4.47	+ 1.7	15	8,342	sw.	36	se.	21	3	7	20	7.7	44.5	1881	30.2	1880
Detroit	724	21	29.27	30.08	+ .02	32.1	— 5.1										5.30	+ 2.8	13	10,291	sw.	45	sw.	21									
Upper Lake Region.						33.6	— 0.8	52	7	39	14	18	28	25	29	79	3.56	+ 1.1														
Alpena	609	20	29.32	30.00	— .02	31.3	— 0.4	53	8	40	3	27	25	25	28	81	3.79	+ 0.8	17	7,940	w.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Escanaba	.....	21	.....	.....	.....	35.0	— 3.9	58	7	37	16	29	30	28	29	78	2.34	— 0.1	10	9,068	w.	40	sw.	26	6	6	18	.....	36.1	1888	23.5	1880
Grand Haven	628	21	29.34	30.04	+ .01	33.2	.....	53	8	35	2	27	30	25	27	77	5.41	+ 2.4	20	7,674	nw.	40	sw.	17	3	5	22	9.1	41.2	1878	32.0	1880
Manistee	615	4	29.35	30.05	.....	29.3	— 3.9	52	8	42	9	30	36	21	25	84	5.03	.....	19	7,676	nw.	40	sw.	18	5	7	18	8.0	38.3	1890	33.2	1891
Marquette	734	21	29.14	29.96	— .05	36.0	— 2.1	65	7	47	2	29	29	28	28	79	3.32	+ 0.8	18	9,351	nw.	47	nw.	23	1	11	18	7.4	38.2	1888	28.8	1880
Port Huron	639	18	29.37	29.96	.....	29.8	.....	60	7	38	3	5	27	20	25	76	5.26	+ 2.6	18	6,139	se.	37	se.	15	0	6	19	7.2	43.1	1878	24.7	1880
Sault de Ste. Marie	642	4	29.24	29.96	.....	33.8	— 4.9	53	8	36	*	29	24	28	23	80	5.85	.....	25	14,425	s.	51	s.	25	0	6	17	6.8	41.3	1870	27.3	1880
Chicago	824	21	29.17	30.09	+ .03	32.8	— 3.4	50	8	36	—	8	28	19	29	80	3.83	+ 1.2	11	8,728	nw.	34	nw.	17	7	7	20	8.1	36.2	1888	30.2	1891
Milwaukee	673	22	29.31	30.06	+ .01	30.2	.....	48	9	31	—	24	28	19	23	87	3.40	+ 1.4	12	6,624	s.	32	w.	17	8	9	13	6.5	36.7	1878	20.1	1880
Green Bay	617	6	29.36	30.05	.....	25.2	— 5.6										3.32	.....	8	4,281	nw.	30	nw.	24	6	12	12	6.5	32.6	1890	20.1	1881
Duluth	656	22	29.29	30.05	+ .02	21.4	— 1.3	62	7	29	—	24	28	11	40	16	1.11	— 0.6														
Extreme Northwest.						20.3	— 4.9										1.13	+ 0.4														
Moorhead	935	11	28.99	30.07	—.01												0.99	+ 0.1	8	8,399	s.	32	se.	30									

Table of miscellaneous meteorological data for November, 1891—Weather Bureau observations—Continued.

Districts and stations.	Elevation above sea-level, feet.	Length of record, years.	Pressure, in inches.			Temperature of the air, in degrees Fahrenheit.										Humidity and precipitation.					Wind.					Cloudless days.	Partly cloudy days.	Cloudy days.	Average cloudiness, tenths.	Mean temperature data since opening of station.			
			Mean pressure, 8 a. m. and 8 p. m. + 2.	Mean reduced.	Departure from normal.	Mean max. and min. + 2.	Departure from normal.	Maximum.	Date.	Mean maximum.	Minimum.	Date.	Mean minimum.	Greatest daily range.	Mean temperature of the dew-point.	Mean relative humidity, per cent.	Precipitation, in inches.	Departure from normal.	Days with .01, or more.	Total movement, miles.	Prevailing direction.	Maximum velocity. Miles per hour.	Maximum velocity. Direction.	Maximum velocity. Date.					Highest for month.	Year.	Lowest for month.	Year.
Ex. Northwest—Con.																																
Saint Vincent	804	12	29.10	30.03	— .06	18.7	— 1.9	63	6	28	—24	28	9	40	12	79	0.88	0.0	8	8,299	n.	36	s.	29	14	3	13	5.1	28.4	1890	15.8	1880
Bismarck	1,698	18	28.15	30.05	— .02	23.0	— 5.9	63	5	33	—11	17	13	38	17	82	1.20	+ 0.6	12	7,067	nw.	50	nw.	10	4	15	11	6.6	37.0	1890	16.8	1875
Fort Buford	1,899	13	27.93	30.05	— .02	23.4	— 4.5	68	5	33	— 8	17	14	35	17	79	1.44	+ 1.1	7	5,544	nw.	46	w.	21	11	8	11	5.2	35.8	1890	18.8	1880
Upper Miss. Valley.						34.4	— 5.8										3.56	+ 1.3														
Minneapolis	.....	.....	.....	.....	.....	28.6	.....	60	4	38	—13	29	20	34	.....	.....	0.87	.....	7	.....	w.	.....	.....	.....	11	7	12	.....	.....	.....	.....	.....
Red Wing	758	....	29.22	30.09	.....	27.2	.....	59	7	35	— 9	29	19	32	18	71	0.67	.....	5	6,600	w.	32	nw.	16	10	12	8	5.6	.....	.....	.....	.....
Saint Paul	850	22	29.13	30.10	+ .04	25.8	— 6.6	58	7	34	—12	29	18	37	18	77	1.03	— 0.2	5	4,628	se.	24	se.	3	7	11	12	6.0	39.6	1870	22.2	1880
La Crosse	720	20	29.27	30.09	+ .03	30.2	— 5.8	58	4	39	— 4	29	22	37	21	72	1.21	— 0.5	8	4,793	s.	26	nw.	1	7	13	10	6.2	40.0	1878	25.1	1880
Davenport	613	20	29.44	30.13	+ .04	32.5	— 6.8	58	6	39	—10	29	26	30	25	78	3.56	+ 1.6	14	7,736	w.	36	nw.	16	9	6	15	5.9	42.3	1878	30.7	1880
Des Moines	869	14	29.14	30.09	— .01	32.0	— 6.0	66	6	40	—10	29	24	31	23	75	1.34	— 0.6	9	5,809	nw.	36	sw.	19	11	8	11	5.7	42.0	1878	27.9	1880
Dubuque	651	19	29.36	30.09	+ .01	31.0	— 6.0	57	8	37	— 7	29	25	29	24	78	3.24	+ 1.2	10	4,431	nw.	25	w.	26	7	7	16	6.4	39.8	1890	27.3	1880
Keokuk	613	21	29.42	30.11	+ .02	35.6	— 5.7	68	15	43	— 1	29	28	38	27	76	3.60	+ 1.6	13	5,635	nw.	28	nw.	17	11	5	14	5.5	44.2	1890	31.5	1880
Cairo	359	21	29.75	30.14	+ .03	44.4	— 4.0	72	7	52	14	29	37	26	36	75	7.30	+ 3.1	12	6,735	se.	40	sw.	22	10	9	11	5.6	52.1	1879	37.2	1880
Springfield, Ill	644	13	29.40	30.10	— .01	37.1	— 6.1	68	15	44	4	29	30	36	28	73	5.49	+ 2.6	13	7,037	nw.	32	sw.	21	9	7	14	6.1	45.6	1885	32.3	1880
Saint Louis	571	21	29.49	30.11	— .01	41.2	— 5.0	68	15	47	10	29	35	28	32	73	5.30	+ 2.4	12	9,359	sw.	37	nw.	16	10	7	13	5.6	49.6	1883	31.9	1880
Missouri Valley.						32.1	— 5.1										0.65	— 0.4														
Columbia	.....	.....	.....	.....	.....	41.1	.....	72	7	52	5	29	31	34	.....	.....	3.90	.....	9	6,111	nw.	30	sw.	21	8	6	16	6.1	.....	.....	.....	.....
Kansas City	963	4	29.06	30.12	.....	39.0	.....	79	6	47	7	29	31	36	29	73	0.95	.....	7	7,108	n.	30	s.	19	9	11	10	5.7	46.4	1890	39.0	1891
Springfield, Mo	1,356	5	28.64	30.12	.....	41.2	.....	78	7	50	10	29	33	30	32	78	5.39	.....	15	8,417	se.	34	se.	20	9	10	11	5.5	48.2	1890	41.0	1889
Leavenworth	842	21	29.20	30.11	— .01	38.7	— 4.6	80	6	47	8	29	30	37	27	71	0.80	— 1.6	6	5,493	n.	28	s.	19	7	12	11	6.0	45.9	1878	31.7	1880
Topeka	.....	5	.....	.....	.....	39.5	.....	83	6	52	7	17	27	43	.....	.....	0.64	.....	10	.....	n.	....	.....	.....	10	14	6	....	44.6	1890	35.6	1888
Omaha	1,113	21	28.90	30.12	— .02	34.2	— 4.8	68	6	42	— 2	28	26	33	22	69	0.37	— 0.8	5	6,045	nw.	34	nw.	11	8	10	12	5.9	43.8	1878	26.4	1880
Crete	.....	5	.....	.....	.....	36.8	.....	78	4	49	3	28	25	38	.....	.....	0.25	.....	4	.....	nw.	....	.....	.....	7	8	15	....	42.2	1890	35.6	1889
Valentine	2,613	7	27.28	30.11	.....	32.8	— 5.6	75	5	44	—18	17	21	38	22	73	0.78	+ 0.4	9	7,166	nw.	52	nw.	11	9	14	7	5.0	40.6	1888	29.9	1886
Sioux City	1,158	....	28.81	30.11	.....	30.2	.....	64	4	39	— 9	28	21	29	21	74	0.37	.....	10	7,826	nw.	41	s.	18	8	9	13	6.0	.....	.....	.....	.....
Pierre	1,470	....	28.45	30.09	.....	29.7	.....	80	5	41	— 8	17	18	42	21	80	0.47	.....	9	5,856	se.	42	nw.	10	5	9	16	6.7	.....	.....	.....	.....
Huron	1,310	11	28.62	30.10	— .01	24.2	— 7.2	62	7	35	—18	28	13	40	16	77	0.94	+ 0.4	8	10,132	se.	46	se.	5	9	13	8	4.9	34.6	1890	24.2	1891
Yankton	1,232	19	28.74	30.12	+ .01	30.4	— 3.2	65	4	41	— 8	28	20	35	21	79	0.34	— 0.3	5	6,634	nw.	38	nw.	11	4	12	14	6.9	39.2	1890	23.5	1880
Northern Slope.						33.3	— 0.8										0.47	0.0														
Fort Assiniboine	2,690	12	27.10	30.00	— .09	28.9	— 1.9	66	4	39	—11	16	19	40	19	71	0.15	— 0.5	6	9,181	sw.	60	nw.	10	8	14	8	5.7	40.6	1890	21.0	1880
Miles City	2,374	....	27.46	30.06	.....	29.9	.....	73	5	41	—10	17	19	36	22	82	0.46	.....	8	3,907	w.	40	w.	10	11	9	10	5.0	.....	.....	.....	.....
Helena	4,118	12	25.80	30.11	— .03	34.0	+ 1.4	68	4	42	— 8	16	26	27	20	61	0.82	+ 0.3	7	6,312	sw.	48	sw.	9	8	6	16	5.9	39.1	1885	19.3	1880
Rapid City	3,280	6	26.59	30.07	.....	34.6	.....	77	5	46	— 3	17	23	42	20	64	0.17	.....	8	6,671	w.	47	nw.	21	8	16	6	5.1	42.1	1890	31.0	1888
Cheyenne	6,105	21	23.97	30.08	— .07	34.3	— 1.1	75	5	46	— 4	16	23	38	18	60	0.82	+ 0.5	10	7,966	nw.	48	w.	20	9	16	5	4.9	39.3	1873	23.1	1880
Lander	5,377	....	24.63	30.20	.....	29.6	.....	69	4	43	—15	16	17	37	15	67	0.76	.....	6	2,076	sw.	30	sw.	30	12	16	2	4.2	.....	.....	.....	.....
Fort McKinney†	5,000	4	24.99	30.12	.....	32.2	.....	74	5	42	—14	16	22	42	19	64	0.77	.....	7	6,238	n.	55	n.	21	10	11	9	5.1	41.6	1890	32.2	1891
North Platte	2,841	18	27.10	30.12	— .04	35.9	— 1.4	76	4	49	— 5	17	23	42	22	69	0.08	— 0.3	4	5,770	w.	46	nw.	10	5	18	7	5.5	39.7	1878	24.0	1880
Middle Slope.						39.3	— 2.0										0.34	— 0.5														
Denver	5,287	20	24.74	30.16	— .02	37.8	— 2.2	75	4	50	2	17	26	37	16	48	0.69	0.0	7	5,510	nw.	50	nw.	21	11	15	4	4.4	42.9	*	22.0	1880
Pueblo	4,734	4	25.25	30.12	.....	39.7	.....	77	5	55	8	17	24	48	14	44	0.18	.....	2	5,107	nw.	60	nw.	21	8	20	2	4.4	41.0	1890	33.0	1889
Concordia	1,410	7	28.59	30.14	.....	39.2	— 2.5	82	6	50	6	17	28	38	28	76	0.20	— 1.2	6	5,466	n.	34	s.	18	8	14	8	5.1	44.6	1890	30.6	1889
Dodge City	2,523	18	27.42	30.12	— .01	40.9	— 1.4	81	6	53	4	17	28	41	25	66	0.12	— 0.4	2	7,806	nw.	50	sw.	18	10	16	4	4.5	45.2	1885	26.2	1880
Wichita	1,366	4	28.61	30.11	.....	42.6	.....	83	6	53	10	17	32	35	29	66	0.47	.....	7	7,492	n.	47	n.	21	14	10	6	3.9	45.9	1890	39.4	1889
Oklahoma City	1,239	....	28.78	30.12	.....	47.0	.....	86	5	58	13	17	36	35	33	68	1.17	.....	10	7,915	se.	48	nw.	22	17	10	3	3.0	.....	.....	.....	.....
Southern Slope.						49.0	+ 2.1										0.16	— 1.6														
Fort Sill	1,200	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	54.0	1879	36.6	1880
Abilene	1,748	7	28.27	30.10	— .04	54.3	+ 0.6	84	6	66	20	17	43	36	36	59	0.12	— 2.6	2	9268	s.	44	nw.	22	16	9	5	3.3	56.2	1885	47.8	1889
Fort Stanton	6,152	8	23.96	30.10	.....	43.6	+ 3.6	71	4	58	15	25	29	44	18	43	0.19	— 0.6	2	3,702	w.	36	sw.	15	13	10	1	3.6	44.4	1885	30.1	1884
Southern Plateau.						53.6	+ 2.9										0.03	— 0.5														
El Paso	3,796	14	26.25	30.04	— .11	54.8	+ 2.7	81	1	68	27	17	41	40	16	28	T.	— 0.6	0	5,488	nw.	36	nw.	8	24	5	1	1.9	57.3	1878	46.3	1880
Santa Fé	7,026	18	23.28	30.17	— .07	40.8	+ 2.7	66	4	52	17	17	30	32	14	41	0.13	— 0.8	1	5,293	n.	32	ne.	27	22	6	2	2.7	42.7	1873	29.6	1880
Tucson	2,432	....	27.52	30.04	.....	58.9	.....	89	4	76	30	21	41	43	23	32	T.	.....	0	4,999	nw.	34	nw.	8	19	9	2	2.6	.....	.....	.....	.....
Yuma	141	17	29.86	30.01	— .01	64.7	+ 2.0	92	4	81	36	20	48	40	31	37	0.00	— 0.3	0	3,824	n.	33	n.	8	28	2	0	0.9	65.2	1890	56.7	1880
Keeler	3,622	7	26.39	30.05	.....	54.2	+ 4.1	73	4	65	35	15	43	29	29	41	0.00	— 0.3	0	3,169	e.	30	n.	23	19	1	10	3.1	54.2	1891	45.1	1886
Middle Plateau.						41.9	+ 4.5										0.35	— 0.6														
Carson City	.....	4	25.42	.....	.....	44.4	.....	72	4	61	16	15	28	46	23	50	T.	.....	0	.....	.....	.....	.....	.....	26	3	1	1.3	44.4	1891	39.2	1890
Winnemucca	4,340	13	25.76	30.21	+ .01	41.0	+ 6.0	73	4	54	12	15	27	39	21	51	0.14	— 0.5	3	6,436	sw.	40	sw.	30	8	11	11	5.2	42.1	1885	30.0	1880
Salt Lake City	4,345	18	25.72	30.19	— .04	44.2	+ 4.2	72	5	52	20	16	36	27	31	65	0.90	— 0.5	8	3,261	nw.	26	nw.	15	11	4	15	5.6	44.2	1891	30.3	1880
Montrose	5,795	7	24.31	30.11	.....	40.6	+ 3.4	69	5	53	13	17	28	34	17	50	0.01	— 0.9	1	3,208	se.	30	n.	21	16	6	8	4.2	40.6	1891	28.7	1886
Northern Plateau.																																
Baker City	3,430	....	26.54	30.14	.....	37.0	.....	63	4	45	2	16	29	28	29	76	1.31	.....	14	3,379	se.	30	se.	20	5	10	15	6.5	.....	.....	.....	.....
Spokane Falls	1,938	11	28.02	30.12	— .02	39.8	+ 2.4	69	4	47	14	16	33	24	32	76	1.46	0.0	12	4,100	s.	42	sw.	20	6	15	9	6.0	41.1	1885	32.4	1886
Walla Walla	1,018	6	29.04	30.14	.....	45.6	.....	76	4	53	18	16	39	25	36	73	1.57	.....	9	3,910	s.	30	w.	20	4	17	9	6.4	45.6	1891	39.2	1888
N. Pac. Coast Region.						48.3	+ 2.5										12.00	+ 4.9														
Fort Canby	179	9	29.86	30.06	+ .02	49.2	+ 1.5	61	4	53	39	14	46	11	49	96	14.10	+ 7.6	27	12,026	s.	63	s.	4	0	4	26	8.6	51.0	1890	45.6	1886
Neah Bay	.....	7	.....	.....	.....	48.2	.....	62	*	54	32	15	42	19	.....	.....	23.06	+ 10.1	20	.....	sw.	....	.....	.....	2	5	21	....	48.6	1884	44.2	1886
Olympia	44	15	30.03	30.08	+ .01	47.2	+ 2.0	61	3	52	29	10	43	14	44	92	10.83	+ 4.6	24	2,776	sw.	24	w.	9	0	7	23	8.6	47.2	1891	39.8	1880
Port Angeles	14	7	30.00	30.01	+ .02	44.9	+ 3.5	60	3	51	29	16	39	18	42	93	6.24	+ 3.5	21	2,605	s.	34	w.	20	0	9	21	8.3	44.9	1891	39.5	1886
Tatoosh Island†	86	9	29.91	30.01	.00	47.8	+ 1.2	60	3	51	34	16	44	13	46	90	17.68	+ 6.4	24	13,663	e.	66	e.	11	1	7	22	8.3	49.2	1889	44.5	1883
Astoria	.....	7	.....	.....	.....	49.5	+ 2.5	66	3	54	37	17	45	16	.....	.....	15.18	+ 7.5	26	.....	sw.	....	.....	.....	2	2	26	....	49.5	1891	44.2	1886
Portland	80	21	30.02	30.11	+ .01	49.0	+ 2.5	68	3	54	34	16	44	17	45	89	5.74	— 0.3	21	3,840	s.	31	s.	20	0	12	18	8.1	49.2	1877	41.6	1886
Roseburgh	523	15	29.60	30.16	+ .02	50.8	+ 4.1	74	3	58	32	17	44	21	45	82	3.13	— 0.4	16	1,949	s.	21	s.	2	6	11	13	6.4	50.8	1891	38.7	1880
Mid. Pac. Coast Reg.						52.2	+ 2.9										6.56	— 2.2														
Eureka	64	5	30.09	30.15	.....	52.4	.....	72	4	58	36	15	47	19	50	92	2.72	.....	14	3,225	n.	30	se.	2	9	10	11	5.6	53.2	1889	50.0	1890
Red Bluff	342	14	29.77	30.12	.00	57.0	+ 3.6	79	25	68	36	20	46	35	42	62	0.46	— 2.7	6	4,069	nw.	30	se.	30	19	7	4	3.2	58.0	1890	50.0	1880
Sacramento	64	15	30.04	30.11	+ .01	55.9	+ 2.5	77	4	68	34	15	44	32	42	67	0.48	— 1.6	4	3,132	n.	24	nw.	7	22	6	2	2.2	55.9	1891	49.5	1882
San Francisco	109	21	29.99	30.11	+ .01	58.6	+ 2.6	78	10	66	47	20	52	23	48	76	0.56	— 2.2	5	3,068	w.	24	w.	12	23	3	4	2.4	59.0	1890	52.5	1882
Point Reyes Light†	.....	.....	.....	.....	.....	56.5	.....	71	*	63	41	16	50	24	.....	.....	1.19	.....	5	.....	nw.	.....	.....	.....	.....	15	9	6	.....	.....	.....	.....	.....
S. Pac. Coast Region.						60.3	+ 0.7										0.06	— 1.1														
Fresno	338	5	29.73	30.09	.....	56.2	.....	81	4	70	34	14	42	35	39	59	0.21	.....	1	2,201	nw.	18	nw.	5	20	9	1	2.4	56.9	1890	54.1	1889
Los Angeles	330	15	29.69	30.04	.00	61.2	+ 1.2	85	*	75	40	12	48	39	47	73	0.00	— 1.5	0	1,990	w.	12	w.	19	20	10	0	2.2	60.2	1890	55.2	1879
San Diego	93	21	29.94	30.04	— .01	59.4	+ 0.2	82	9	68	44	16	50	30	49	74	0.10	— 0.7	2	2,715	w.	17	nw.	19	22	6	2	2.4	63.8	1890	56.0	1886

NOTE.—The data at stations having no departures are not used in computing the district averages. Letters of the alphabet denote number of days missing from the record.
* Two or more directions, dates, or years. † Received too late to be considered in departures, etc.

Chart I. Tracks of Area

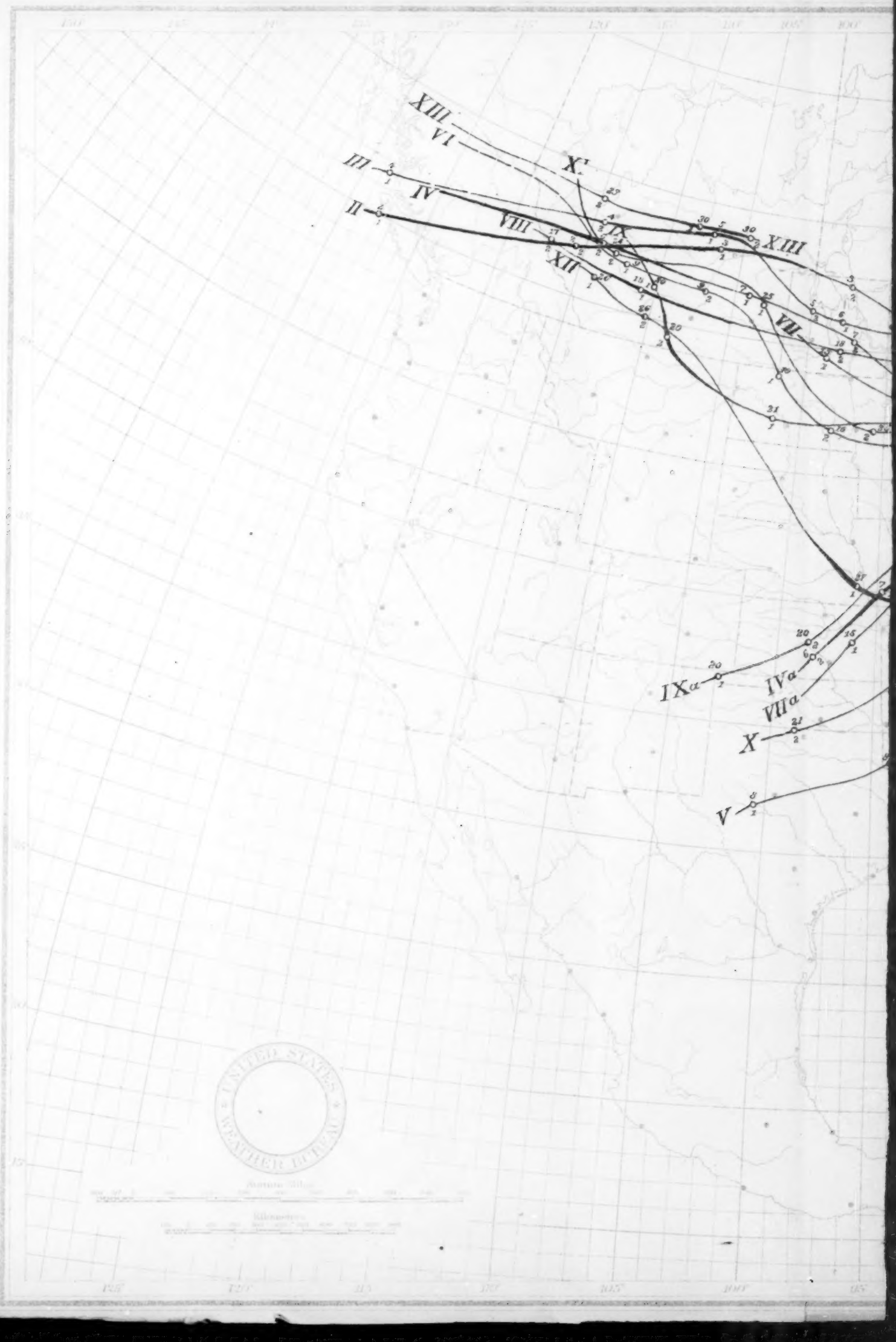
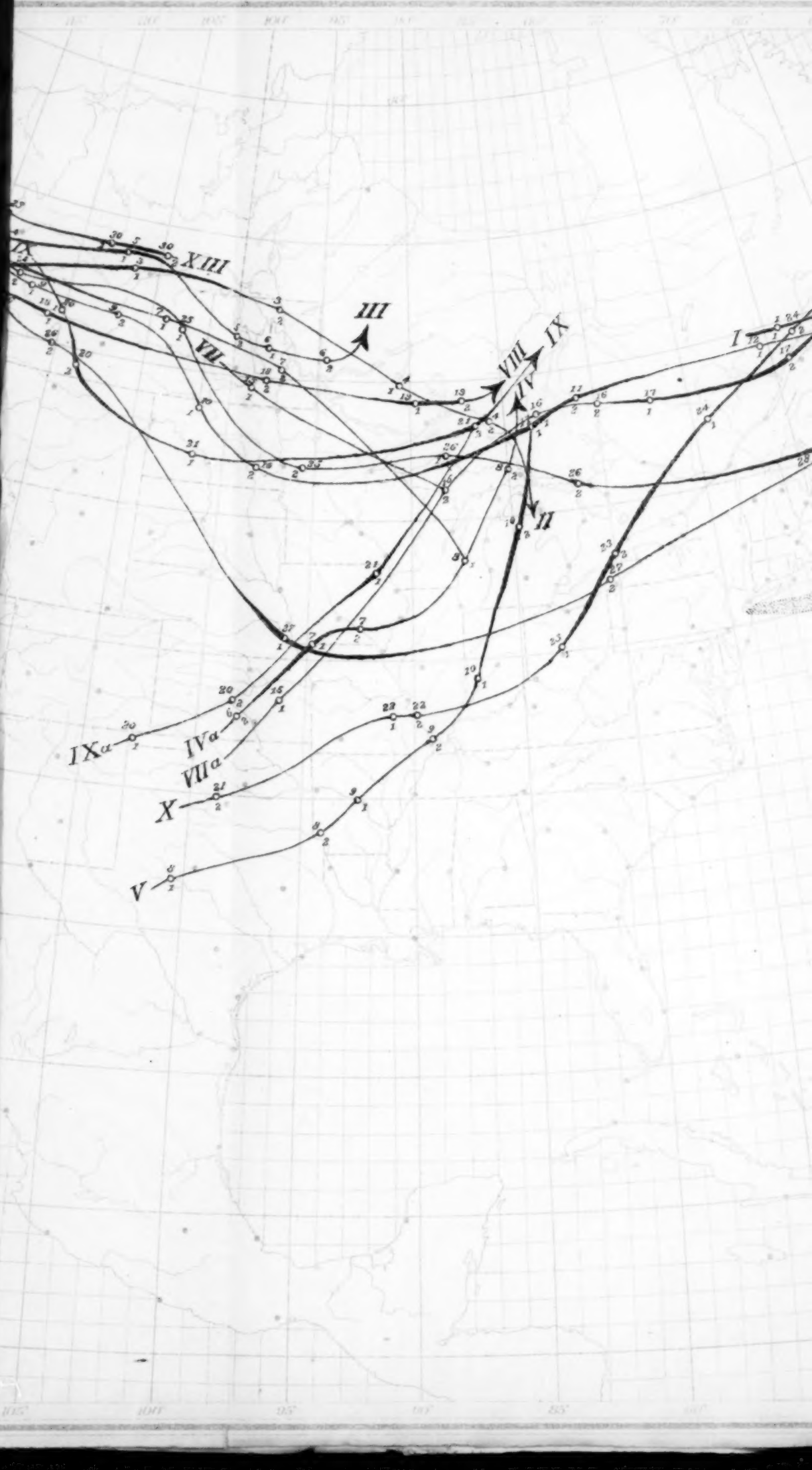
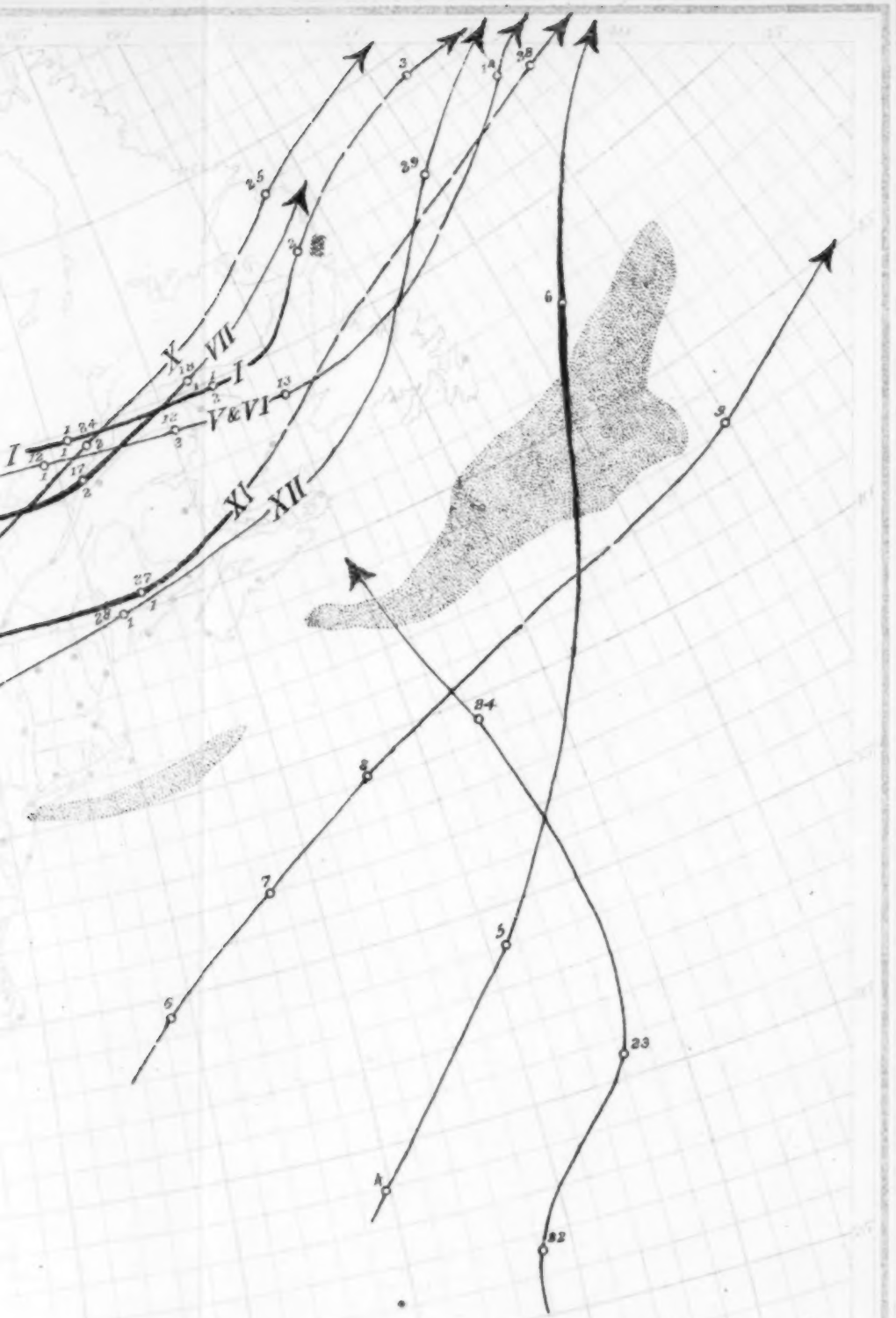


Chart I. Tracks of Areas of Low Pressure. November, 1891.





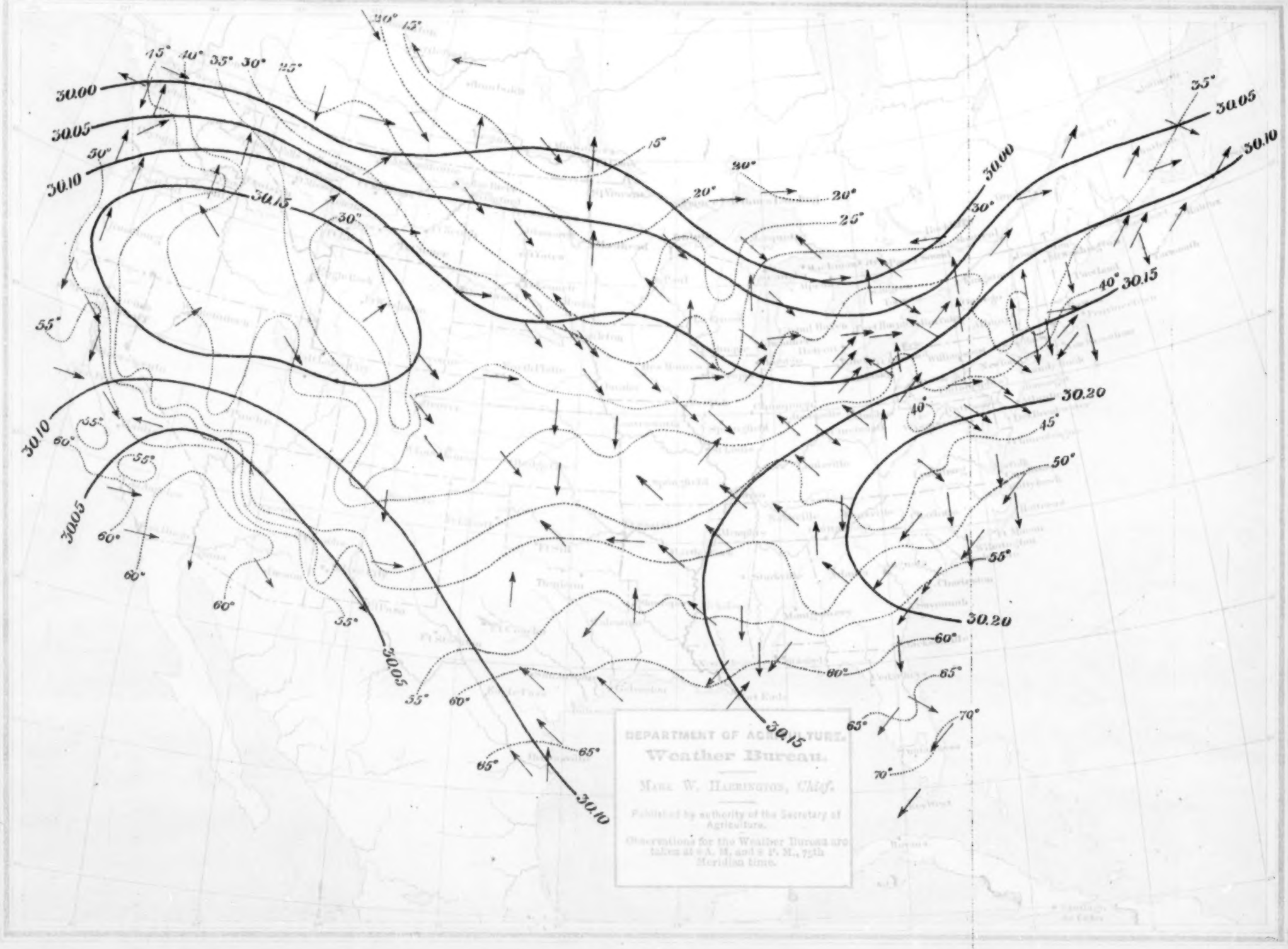
NOTES.

The Roman letters show number and order of areas of low pressure. The figures above the lines show the days of the month, those below (1 and 2) indicate, respectively, the 8 a. m. and 8 p. m., 75th meridian time, observations. The heavy portion of tracks indicates where the greatest storm energy was displayed.

The dotted shading ( ) indicates fog belts.

The ruled shading ( ) indicates the position in which field-ice or icebergs were observed.

Chart II. Isobars, Isotherms, and Winds, November, 1891.

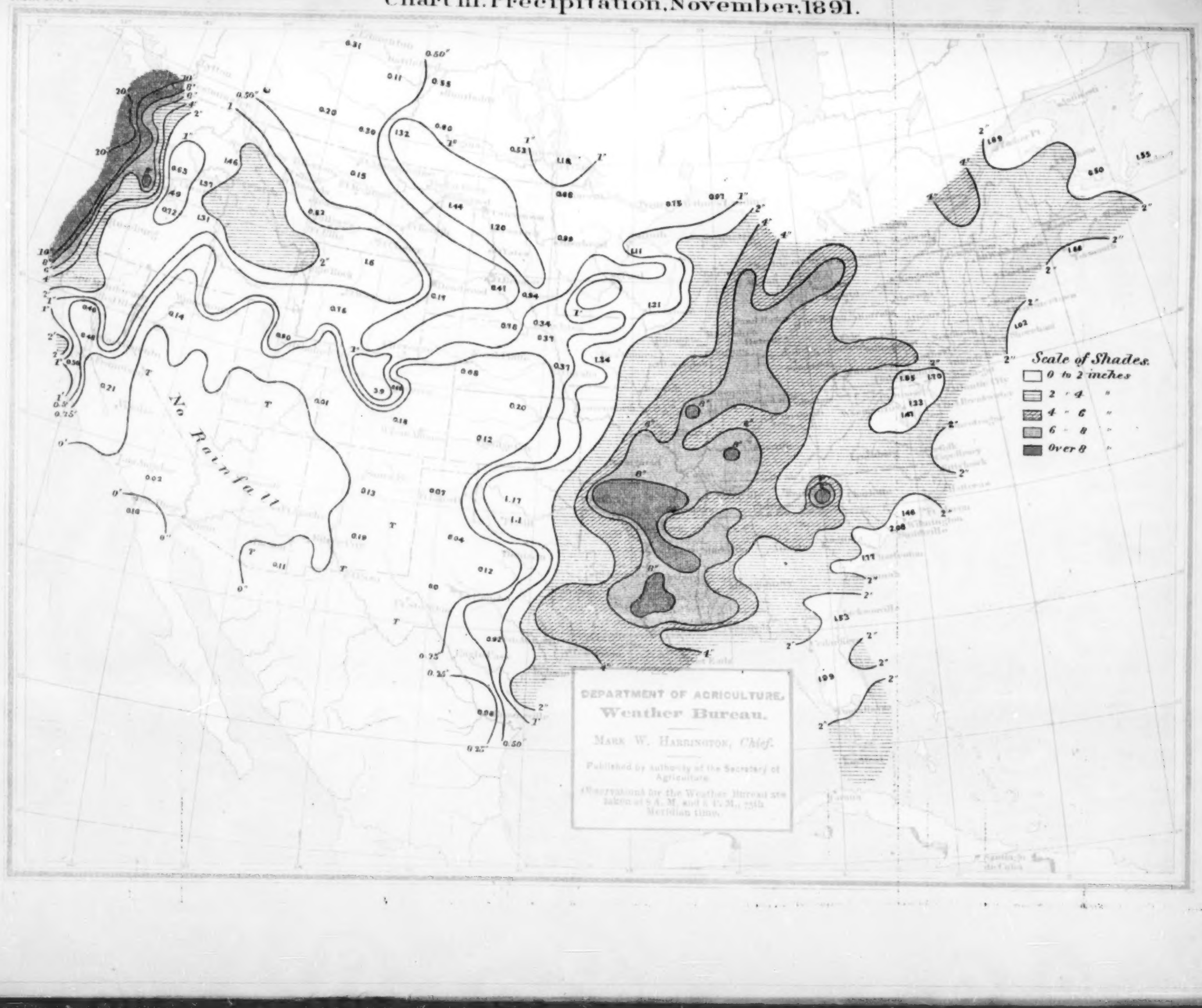


Form 106 F.

Chart III. Precipitation, November, 1891.

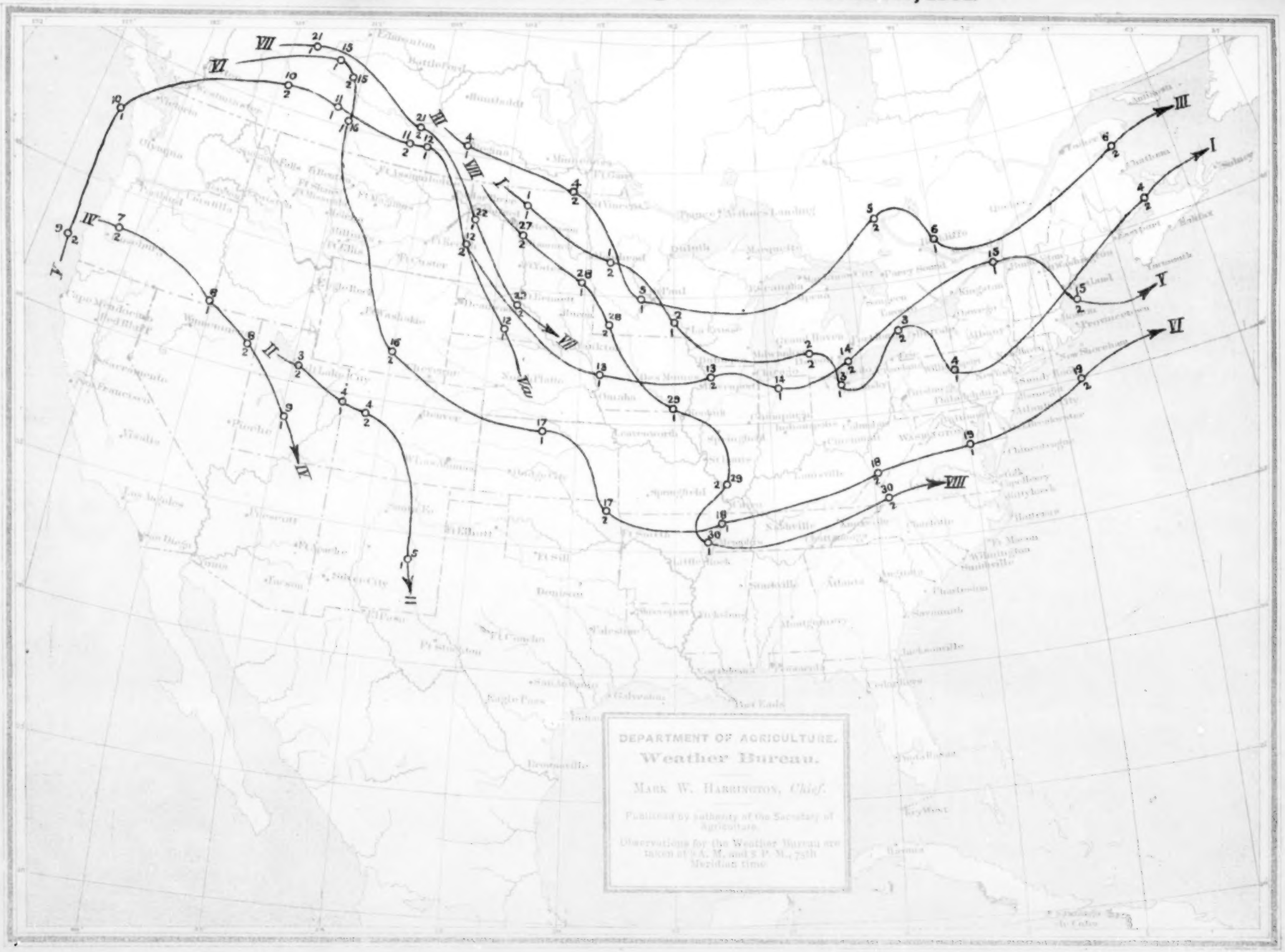
Form 106 F.

Chart III. Precipitation, November, 1891.


No Rainfall
Scale of Shades.
0 to 2 inches
2 " 4 "
4 " 6 "
6 " 8 "
Over 8 "
DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.

Form 106 F

Chart IV. Tracks of areas of High Pressure. November, 1891.


DEPARTMENT OF AGRICULTURE.
Weather Bureau.
MARK W. HARRINGTON, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.

Form 1046 F

Chart V. Depth of Snowfall (inches) during November, 1891, and Limits of Freezing Weather.

Northern limit of Freezing Weather.
Pacific Ocean
Western limit of Freezing Weather.
Southern limit of Freezing Weather.
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Form 100-S

Chart VI — Depth of Snow (inches)

Form 106 F.

Chart VI. Depth of Snow (inches) reported on ground November 30, 1891.

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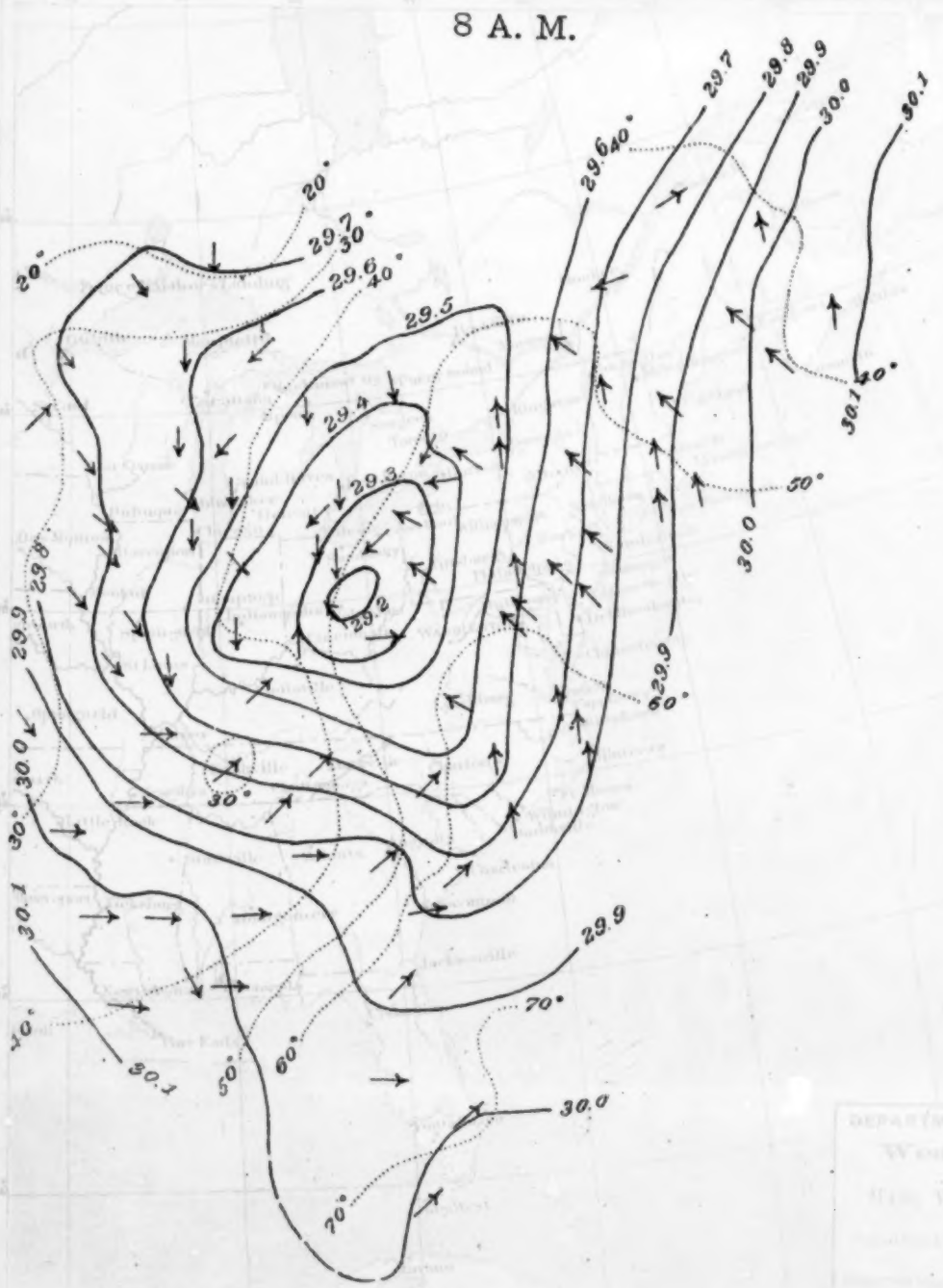
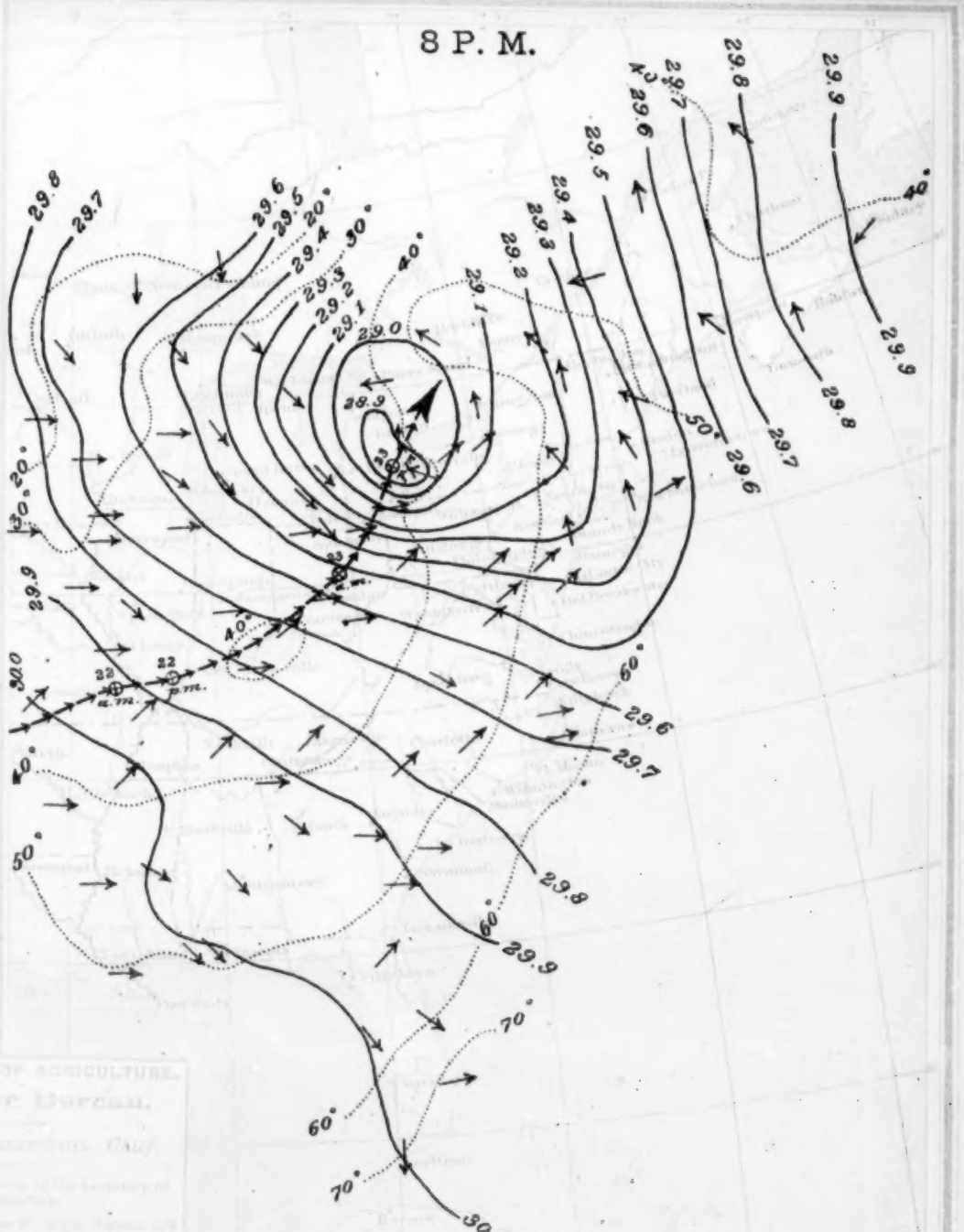
Weather Bureau.
MARK W. HARRINGTON, Chief.
Published by authority of the Secretary of Agriculture.
Observations for the Weather Bureau are taken at 8 A. M. and 8 P. M., 75th Meridian time.

Chart VII. Isobars, Isotherms, and Wind Direction at 8 a. m. and 8 p. m. (75th Meridian time), November 23, 1891.

Chart VII. Isobars, Isotherms, and Wind Direction at 8 a. m. and 8 p. m. (75th Meridian time), November 23, 1891.





DEPARTMENT OF AGRICULTURE.
Weather Bureau.
Willis W. Harrington, Chief.